

PhD thesis external examiner report by Youssef Diab, Paris East University

Thesis title: Towards a Zero-Emission Urban Mobility, Urban design as a mitigation strategy, harmonizing insights from research and practice

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General comments:

This report will refer to the content, structure, formatting and referencing in the thesis document in general without going into details of every section. This research explores how urban design can be a mobility mitigation strategy to promote the use of zero-emission modes such as walking, cycling, and public transport. The gaps remain significant, in the scientific literature and practical analysis, on the relationship between the built environment and mobility issues. This observation is considered, by the candidate as a significant barrier for mitigation efforts through urban design.

It elaborates on a mixed concepts and methods employed in France and Norway, consisting of workshops, interviews, and a survey. The results were crossed with findings from research literature. The results show that achieving a permanent modal shift requires the use of zero-emission choices to be both possible and pleasurable. The influence of urban design is likely most significant during trips, when a person moves through a city and its public spaces.

The candidate affirms that the neighborhood scale regarding daily mobility should be considered as a kind of use of public space and tries to demonstrate it! The ultimate target is to establish a set of properties that summarizes important characteristics of public spaces that actively promote zero-emission modes. Building upon these requirements and current design practices, she outlines a draft for a framework to support designers in implementing mobility mitigation in their practices

The work was done in the scope of an applied research through a collaborative project, which brings added value to the thesis as the validation was done using real-world data and practices. The main contributions of the thesis are in Chapters 4 and 5 (the workshops, interviews and surveys) and in Chapter 7 devoted to the testing of developed concepts and the framework draft linking urban design and modal choice. The chapters 1 to 3 analyze the literature reviews, the research methodology and the theoretical concerns. The conclusions and synthesis in the end of each chapter is highly appreciated. On the form of the document, it is well structured but we can observe some typographical mistakes and unclear long sentences.

Comments on Chapters 4-5:

These chapters provide the research achievements. The Thesis is realized in a research project, Called *Capacities*, with many stakeholders from Canada and the Region Midi – Pyrenees in France. Considering the complexity of the subject area, the contributions of the thesis in identifying the limitations of existing research is clearly explained. But the

conclusion is very limited and allows giving working hypotheses. We expected more from the workshops. The elements given in table 14 (page 181) are very generic. A more precise identification of the problem and potential solution and integration tools had to be considered.

The chapter 5 is well developed. The interviews and survey are useful and are presented in a clear way. The tables 33 and 34 (pages 237 and 238) are also very useful and show the necessary efforts for data collection work and the analysis capacity. We regret, the absence of semi quantifiable tentative of modeling especially for the connectivity.

Comments on Chapter 7:

Chapter 7 provides a high-level framework linking urban design and modal choice. The screen shots show the pre implantation of the framework. The place of this tool is well identified but who is going to use it and for what? Urban planners, Urban Developers, Designers...The presented tables give many ideas and schemes and offer wide perspectives to continue the work.

In conclusion, we can say that linking urban design and modal choice is an important and original subject, the framework shows how urban design can be a part of a mitigation strategy towards zero-emission mobility, promoting a sustainable modal shift in a holistic and interdisciplinary win-win approach. The research has some limits; they were identified by the candidate.

Based on the above considerations, I think this is a good thesis and I authorize the defense.

**Youssef Diab,
Professor**

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