



**Politecnico
di Torino**

Honors Thesis

Master's Degree Architecture for Sustainability.

Abstract

(E)CO-EXISTENCE: Rethinking the city of Piteå as a space for co-existence between humans and nature with a focus towards climate adaptation.

Tutor/Correlator

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(E)co-existence originates from participation in the seventeenth edition of European, where the project created for the Swedish city of Piteå received a special mention, achieving third place. This success provided an opportunity to delve into urgent issues such as climate change and the necessary transformation of cities in response to it. The aim of this thesis is to explore the theme of climate adaptation of urban settlements through the use of nature and biodiversity, understood as tools for adaptation and mitigation. The work concludes with the development of a set of strategies and actions useful for the transition of European cities into places where humans can continue to live and operate in prosperity, coexisting harmoniously with nature and other forms of life. The research is organized into two main phases: a research phase, consisting of the analysis of various case studies and the construction of a bibliography, and a fieldwork phase, including interviews, site visits, and project drawings. The first chapter delves into the different impacts of climate change on European countries, emphasizing the importance of a trans-scalar approach within the policies and actions to be implemented for climate transition in Europe, and illustrating different case studies from the urban to the neighborhood scale, with a special focus on Northern European countries. The second chapter introduces the concepts of Nature-based Solutions (NbS) and urban biodiversity, exploring both the close interconnection between them and their role in adaptation and mitigation. The third chapter explores the design opportunity presented by the competition, the interviews conducted, the site visits, and the resulting design explorations. This chapter concludes with the development of a toolkit aimed at illustrating various strategies and solutions for urban climate adaptation in a simple and immediate manner, showing the applications of project interventions at the urban and micro-urban scales in the city of Piteå. The idea that this work aims to support is that a radical change is now more necessary than ever in the way we conceive and design neighborhoods and cities: no longer places in opposition to nature, but spaces that bring it back to the center, demonstrating a new project sensitivity that interacts with the built environment, and serving as a tool for achieving climate sustainability and human well-being.



1. Underpass biological corridor



2. Overpass biological corridor



3. Urban forest



4. Shore renaturation



5. Retention pond



6. Detention pond



7. Street tree canopies



8. Eco-parking lots



9. Permeable pavements



10. Rain gardens



11. Residential garden



12. Urban farming



13. Pollinator gardens



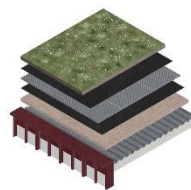
14. Insect hotels



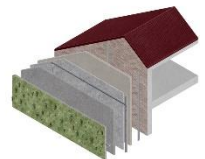
15. Bat boxes



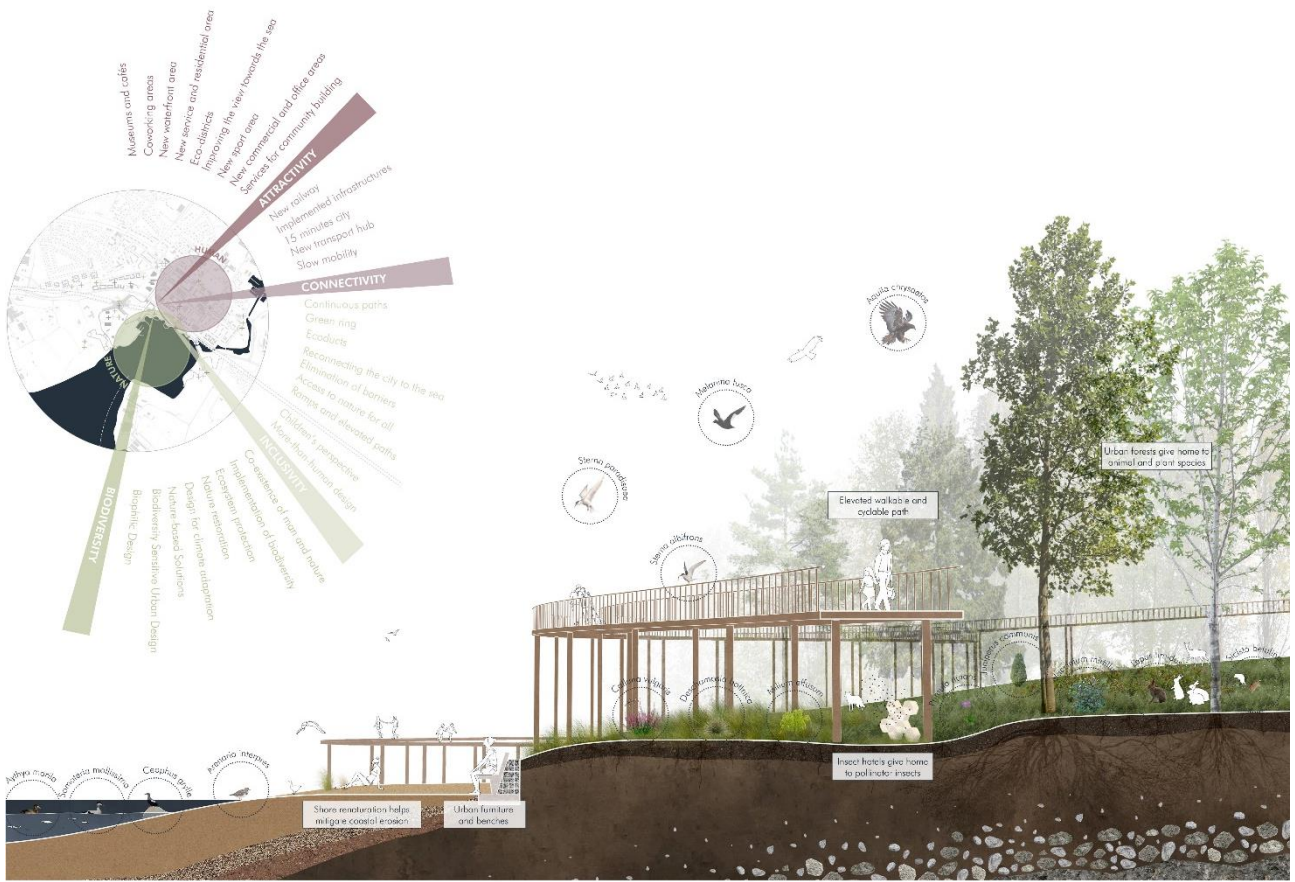
16. Urban birds nests



17. Green roof



18. Green wall



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