

Suggestions for improving the energy-performance of the historical downtown areas of Budapest, Hungary - Guidelines for sustainable urban development by Diana Apro supervised by Prof. Udo Dietrich and Dipl.-Ing. Hans Schäfers

Due to the rapid economic development which followed the industrial revolution, the growth of cities accelerated significantly. Since cities are responsible for almost the half of the total energy consumption, this rapid urban evolution resulted in a remarkable increase of energy demands. For this reason, a paradigm shift towards sustainable urban development came into existence, incorporating the concepts of energy efficient construction and renewable energy utilization. Another consequence of the large-scale urbanization was the increase of sealed surfaces that changed the natural cycles and led to the alteration of the micro-climate in urban environments. The phenomenon of urban heat island effect can be experienced in almost every large city all over the world, generating increased heat stress for buildings, and consequently for humans as well.

The aim of this study is to examine through a case study in Budapest, the capital of Hungary, how the energy-performance of densely built-up, historical downtown areas could be improved with architectural tools, with the consideration of the importance of preserving cultural built heritage. Furthermore, it aims to develop a set of design measures which could be applied as a guideline for not only Hungarian, but presumably for other European cities with similar characteristics as well. The key concept of the research and the proposals is that the energy-performance of a city is not only defined by the energy-performance of buildings, but by the surrounding urban environment as well, therefore measures should be taken comprehensively on urban and building scale.

