

## Chapter 9

# Eco–Methodology for Urban and Transport Planning for the Future Eco–Technology

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### ABSTRACT

*This study gives the reasons and basics of a new approach which adopts eco-technologies to urban and transport planning. In this chapter, in the case of urban and transport planning, based on research findings about human behaviour in the artificial and technical modified environment, the discrepancy between assumptions and real system behaviour is demonstrated. This gives the framework not only to improve urban structures and the transport system, but also to select (eco) technologies which are needed to solve existing problems and to develop agreeable technologies for the future. The study criticizes the use of technology in creating vulnerable urban structures instead of sustainable ones focusing mostly on the last 150 years, when the availability of cheap fossil fuels for use of new transport modes and for heating and cooling has changed urban life. The resulting part is the introduction of a new methodology which uses eco technologies in urban and transport planning with some success stories.*

### INTRODUCTION

During the 20<sup>th</sup> century, the theory and practice of urban development and transport planning had been subject to considerable fluctuations. Urban and transport planning are directly interrelated

with each other, which was not taken into account in the past two centuries, as speed of the transport system has changed due to technical progress. In both disciplines obvious assumptions became the base of theory, e.g. Garden cities (Howard, 1902; Kropotkin, 1901) and Athens Charter appeared as reactions (Johnson, 2008; Walters and

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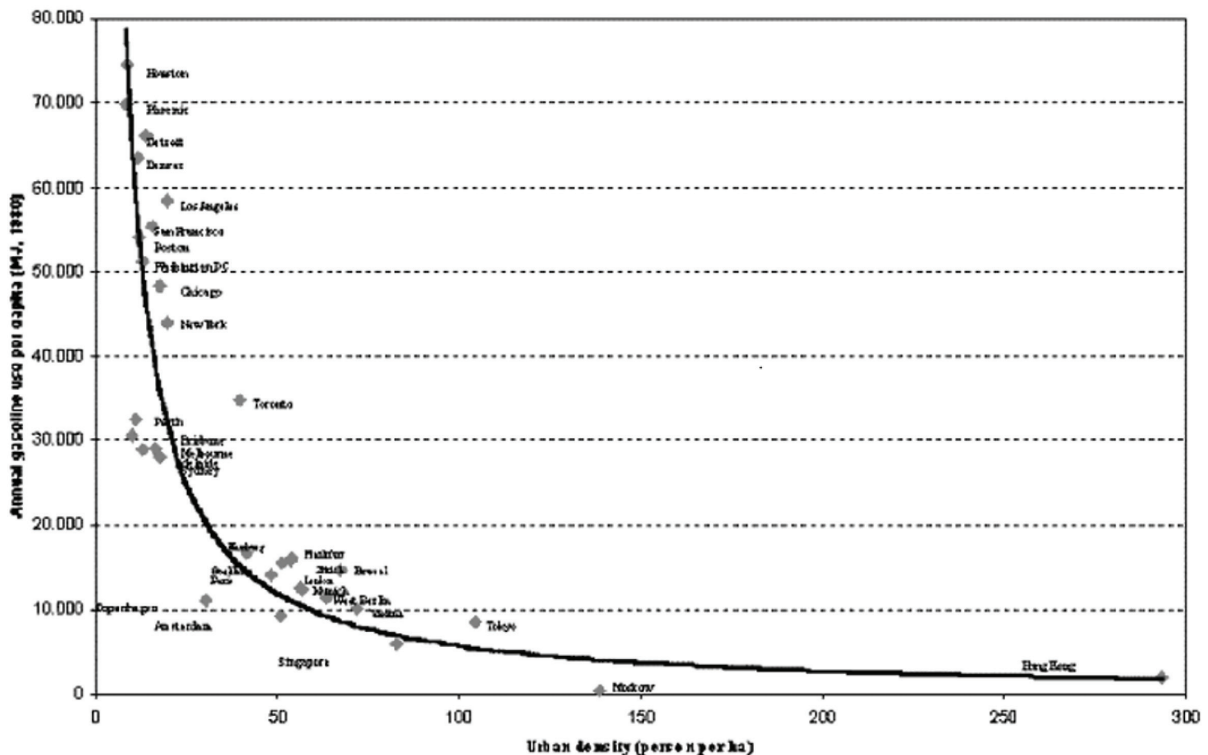
Brown, 1988; Lang, 1994) but sound research on the effects of new fast transport modes was underestimated. Since cheap and easy accessible energy was available, urban planners were enthusiastic about the new opportunities but the risk of an urban development for the future was not recognized (Knoflacher, 1983a; Vuchic, 2008). The narrow and restrictive borders for urban development were removed and new ideas were implemented. The strongest one was probably the so called Athens Charter (1933), initiated by Le Corbusier (Mumford, 2002). With mass motorization people could live in the former rural environment and work in the city. Cities with their high density of people and all human activities lost their compact structure and became low density, monofunctional agglomerations (Bose, 1997), especially after World War II. People living in agglomerations are dependent on mechanical

transport systems for each of their activities and they use up to eighty times more energy only for their daily trips, compared with people living in vital historical urban structures (Figure 1).

Technology is used to compensate the gap between sustainable urban structures and the artificial “modern car dependent agglomerations,” the dominating urban ideology of the 20th and 21th centuries. Fossil energy was cheap and abundant available. In this process, neither the ecology of technics nor the technics of ecology was considered, as these concepts require a substantial understanding of the structures and processes of ecosystems and societies.

Planning a city was not a challenging art of understanding urban life and urban structure anymore, but became more and more an adaptation to the needs of vehicles. Railways, trams and cars had already shaped the urban structure in the 19<sup>th</sup>

*Figure 1. Relationship between urban density and energy use per year (Kenworthy and Laube 2001; Newman and Kenworthy, 1999)*



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