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### **Abstract**

*Metropolization, urban morphology and sustainable development. Urban transformations and sprawl regulation: the case of the Lausanne agglomeration*

This dissertation participates in the perspective of a strategic analysis aiming at specifying the links between knowledge, expertise and political decision. The fundamental hypothesis directing this study assumes that the urban dynamics that has characterized the past thirty years signifies a transformation of the morphogenetic principle of agglomerations' spatial development that results in a worsening of their ecological balance and of city dwellers' quality of life. The environmental implications linked to urban changes and particularly to changes in urban form constitute an ever greater share of research into sustainable urban planning solutions. In this context, urban planning becomes a mode of action and an essential component of public policies aiming at local and global sustainable development.

These patterns of spatial development indisputably emerge at the heart of environmental issues. If the concept of sustainable development provides us with new understanding into territories and their transformations, by arguing in favor of densification, its concretization remains at issue, especially in terms of urban planning and of urban development strategies allowing the appropriate implementations of the solutions offered. Thus, this study tries to answer a certain number of questions: what validity should be granted to the model of the dense city ? Is densification an adequate answer ? If so, under what terms? What are the sustainable alternatives to urban sprawl in terms of planning strategies? Should densification really be pursued or should we simply try to master urban sprawl ? Our main objective being in fine to determine the directions and urban contents of public policies aiming at regulating urban sprawl, to validate the feasibility of these principles and to define the conditions of their implementation in the case of one agglomeration.

Once the Lausanne agglomeration had been chosen as experimentation field, three complementary approaches proved to be essential to this study :

1. a theoretical approach aiming at defining an interdisciplinary conceptual framework of the urban phenomenon in its relation to sustainable development linking urban dynamics – urban form – sustainable development ;
2. a methodological approach proposing simple and effective tools for analyzing and describing new urban morphologies for a better management of the urban environment and of urban planning practices ;
3. a pragmatic approach aiming at deepening reflection on urban sprawl by switching from a descriptive approach of the consequences of the new urban dynamics to an

operational approach, aiming at identifying possible avenues of action respecting the principles of sustainable development.

This analysis approach provided us with three major results, allowing us to define a strategy to curtail urban sprawl. First, if densification is accepted as a strategic objective of urban planning, the model of the dense city can not be applied without taking into consideration other urban planning objectives. Densification does not suffice to reduce the ecological impact of the city and improve the quality of life of its dwellers. The search for a more sustainable urban form depends on a multitude of factors and effects of synergy. Reducing the negative effects of urban sprawl requires the implementation of integrated and concerted urban policies, like for example encouraging densification qualified as resulting from a finalized process, integrating and developing collective forms of transportation and even more so the pedestrian metric with urban planning, integrating diversity on a systematic basis through the physical and social dimensions of the territory.

Second, the future of such sprawling territories is not fixed. Our research on the ground revealed an evolution in the modes of habitat related to ways of life, work organization and mobility that suggest the possibility of the return of a part of the population to the center of cities (end of the rule of the model of the individual home). Thus, the diagnosis and the search for effective and sustainable solutions can not be conceived of independently of the needs of the inhabitants and of the behavior of the actors behind the production of the built territory. In this perspective, any urban program must necessarily be based upon the knowledge of the population's wishes.

Third, the successful implementation of a global policy of control of urban sprawl's negative effects is highly influenced by the adaptation of property offer to the demand of new habitat models satisfying both the necessity of urbanization cost controls (economical, social, environmental) and people's emerging aspirations. These results allowed us to define a strategy to curtail urban sprawl. Its feasibility and conditions of implementation were tested on the territory of the Lausanne agglomeration.