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Sustainable City Planning between Ecology and Economy: Strategies for Biodiversity and Land Reclamation in Urban Spaces—Effects of Climate Adaptation and Induced Economic Effects

What does sustainable development mean for the economy and ecology of a city? The question forms the center of this research project, which examines strategies for biodiversity and land reclamation in urban spaces and thus considers both plans and measures currently implemented in German cities as well as international developments and trends. The goal is the evaluation of such measures with respect to their effects on the economy and climate as well as the quantification of their costs and benefits. The work is based on the supposition that areas of high ecological productivity (semi-natural areas) offer people a wide range of so-called “ecosystem services” (Boyd and Banzhaf 2007, 616; Dearborn and Kark 2010, 435).

Because of their need to adapt to the changing climate, inner-city ecosystem services will become increasingly important to cities. Additionally, only stable ecosystems are positioned to withstand and survive extreme weather. The evaluation and comparison of municipal strategies for sustainable development helps increase awareness of whether and to which degree biodiversity and land reclamation can be supported. It is also necessary to determine the economic effects of such measures. Such economic effects could include decreased costs for maintaining urban green spaces, providing heating and air conditioning or treating drinking and waste water, as well as flood protection or diverse effects on recreation, health and real estate prices.

The quantification of economic effects through ecosystem services is very difficult. As many methods and methods remain to be developed, a great deal of research is required. At the same time, the demand for practical means of measurement and evaluation is considerable. Thus, the research project attempts to assign a precise monetary value to environmental resources under the rubric of the “monetization of environmental resources”. There are many possible approaches, and therefore this project will also serve to extend the state of research on the monetization of environmental resources.

In summary, this integrative, interdisciplinary research project will examine the potential of different urban green spaces, from manicured football fields to urban wilderness. At the same time, various municipal measures and strategies will be analyzed to determine their effectiveness. In addition to the potential semi-natural spaces may hold for climate adaptation, they naturally also have significant influences on climate mitigation, environmental protection and the quality of life of residents. The goal of the monetization of environmental resources is the conversion of an idealized value into a monetary value, since only monetary values influence the behavior of stakeholders in a market economy. The research project focuses on stakeholders on the conceptual and planning levels (municipalities, state and federal agencies) while also taking into account the benefits for and acceptance of residents.