Resilient urban areas: governing the social-ecological system through the adoption of an ecosystem services approach in spatial planning

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Urban areas will increasingly be impacted by climate change, resource depletion, food insecurity and economic instability. These phenomena will significantly reshape towns and cities in the century ahead of us. If cities are to be sustainable, that is, environmentally safe, economically productive and socially inclusive these aspects need to be effectively addressed in policy (United Nations Human Settlements Programme, 2009). These global challenges draw us to concerns on the long-term sustainability of the current global human-environmental system, the central theme of the conference. In this paper we will look at urban areas as complex systems, where these challenges join at the same time. Urban or spatial planning is a vehicle for dealing with complex social-ecological systems as the core is to weigh up different claims on and functions of the urban environment. Countries have responded differently, though, to the need to reorganize, reshape and refocus planning systems to respond to current urban priorities as they have their own spatial planning traditions and cultures.

In this paper, we will explain how urban or spatial planning can contribute to increasing resilience in urban areas by adopting the concept of ecosystem services. Since the sixties there has been an increased understanding of the benefits of ecosystem services for humans (Mooney & Ehrlich, 1997). During the eighties the concept of ecosystem services was introduced (Ehrlich & Ehrlich, 1981) as a quantitative tool to express the economic values of ecosystems. Presently, there is a strong notion that the ecosystem service approach can also be used in spatial planning processes (Brauman et al., 2007 and Colding et al., 2006) to balance the social-ecological system in a better way. Until now the concept has not been adopted in spatial planning practice, although the concept of ecosystem services has been applied in specific (spatially located) situations as an instrument for valuing the system in the context of an interactive process.

We will show how spatial planning in theory can enforce resilience in urban areas, by adopting the concept of ecosystem services, and how this relates to different planning traditions and cultures in the EU. Furthermore we will present the results of three case studies in three districts in the city of Rotterdam: the railway station redevelopment and the districts Hoogvliet and Crooswijk (urban regeneration). In each case ecosystems in the urban environment have been described. By doing this, the interconnection between the humane and natural system and the relation with resilience in the urban area are shown in practice. The cases give an analyses of how ecosystem services emerge within the area. The analysis is based on history, present and future spatial development to mark strengths, weaknesses, opportunities and threats. The cases also show which ecosystem services could contribute to solve urban challenges. We draw lessons from these three urban cases about how the concept of ecosystem services could be applied in
spatial planning processes to increase the resilience of the urban system and what this means in terms of developing policies for sustainable cities.