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Application of Ecosystem service approach to the land use planning in the Kokemäenjoki watershed (Southwestern Finland)

Asko Ijäs (1), Laura Mononen (2), Anne Savola (1), and Petteri Vihervaara (3)

(1) Regional Council of Satakunta, Regional Land Use Planning, 33101 Pori, Finland (asko.ijas@satakunta.fi), (2) Finnish Environment Institute, 80101 Joensuu, Finland, (3) Finnish Environment Institute, Natural Environment Centre, 00251 Helsinki, Finland

Coastal and riparian habitats produce large variety of ecosystem services and they are among the most diverse biomes in the world. Also human settlements and industrial activities focus to these areas, which create conflicts between environmental conservation and human development. Although ecological and social values are considered in the land use planning process, they are often less weighted in the decision-making than economic features. One reason for this is the lack of functional indicators for measuring the ecological or social value of the site with respect to economic values. Ecosystem service approach (EcA) is an analytic process, which aims to combine ecological, social and economic values and integrate them in a comprehensive way into the decision-making. Practical application of EcA, however, requires sophisticated tools which can 1) measure the most relevant ecosystem services of a region, and 2) compare their relative values with respect to the stakeholder preferences.

In our presentation, we describe the application of the EcA to the Kokemäenjoki watershed (61.1–61.8 °N, 21.3–22.9 °E). Our study area (ca. 2 900 km2) covers both the watershed of the Kokemäenjoki riverbed and the shallow coastal waters around the river estuary (i.e. the impact zone). Kokemäenjoki is the biggest river in SW Finland and it has a significant impact on the coastal waters of the Baltic Sea, for example, via nutrient inflows. It is thus essential to consider the ecosystem services of the coastal waters jointly with the watershed. We conduct a comprehensive analysis on the ecosystem services that are produced by the watershed and assess how they can be implemented into the regional land use planning and integrated coastal zone management (ICZM). In the first stage of the analysis, we use GIS-based methodology to measure the quantity of the study area's ecosystem services on GIS layers. After the GIS layers of ecosystem services are produced, we use different weighting schemes to assess how the abiotic resources and ecosystem service potentials (provisioning services, cultural values, etc.) vary within the study area and how the preferences for different ecosystem services or resources affect the overall results of the valuation.

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