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Responses of Ecosystem Service Value to Land Use Change in Beijing from 1998 to 2005

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Studies on ecosystem services are receiving increasingly more attention.The ecosystem services value is a core index which can be measured to evaluate sustainable development of a country or a region,and is also critical in the green GDP accounting.Beijing Municipality in China has a large population and a high urbanization level,unavoidably accompanying some eco-environment problems during such processes,e.g.,reduction in green space and increase in building leading to a growing urban heat island effect in the center of city,mining,soil erosion,and vegetation degradation in the mountain areas.Based on land use data in 1988,1995,2000 and 2005,and the Costanza's method and the coefficients proposed by Gao-di Xie,this paper examined the effects of land use change on ecosystem services value from the perspective of ecosystem services in four ecological areas in Beijing.Results indicated that cropland was converted into build up areas in the center and western plains as well as platform areas,and cropland was converted into build up areas and water bodies in the eastern plain areas while cropland was converted into build up areas and woodland in the mountain areas.The equivalent factor of ecosystem services value was calculated in terms of the price of grain from 1988 to 2005 in Beijing,showing 998.76 yuan.As such,the ecosystem services value of Beijing was found to be 28.184×10⁹ yuan,28.255×10⁹ yuan,28.211×10⁹ yuan and 27.759×10⁹ yuan in 1988,1995,2000,and 2005,respectively.It dropped after the first rise between 1988 and 1995,which was due mainly to increases in water in the eastern plains areas.During the study period,the proportion of the value of infield decreased throughout the study area,whereas the proportion of the value of woodland,grassland and water area increased in the center of city.The grassland in the mountain areas rose.In the eastern plains,the proportion of the value of woodland and grassland decreased first and then increased,contrary to water bodies.The change was found to be the same as the eastern plain areas in western plains and platform areas with the exception of grassland showing an increasing trend.The average of ecosystem services value of 1 hm² was found to be:mountain areas eastern plain areas western plains and platform areas the center of city.Compared with GDP,the ecosystem services value of Beijing accounted for about 4% of GDP in 2005,and it showed a decreasing trend from 1988 to 2005.As a result,ecosystem services value is recommended to be taken into account in the formulation of land use planning,especially the conservation of water and woodland of high coefficients of ecosystem services value in order to achieve sustainable development of Beijing.

【Key Words】 : **Ecosystem services value Beijing Land-use change Sensitivity analysis**

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