

Clinical pathology of landscape through the evaluation of land cover changes using remote sensing and landscape metrics (Case study: Zayanderoud Watershed, Iran)

Authors:

**Ahmadreza Yavari¹,
Esmael Salehi²,
Hamidreza Jafari³ and
Yousef Rafii⁴**

Institution:

1. Associate Professor,
Department of Environmental
Planning, University of Tehran,
Tehran, Iran.

2. Associate Professor,
Department of Environmental
Planning, University of Tehran,
Tehran, Iran.

3. Professor, Department of
Environmental Planning,
University of Tehran, Tehran,
Iran.

4. PhD student, Department of
Environmental Planning,
University of Tehran, Tehran,
Iran

**Corresponding author:
Yousef Rafii**

ABSTRACT:

Change in land use/cover due to the expansion of human activities has a great effect on landscape. As the process of change develops, it leaves many environmental effects on natural ecosystems. With respect to the effects resulted from land use/cover change, gaining knowledge and awareness towards the variability process and clinical pathology of land are inevitable in the evaluation of environmental impacts caused by development when the aim is planning for sustainable management of land. This study was conducted as a pathological investigation and assesses the process and the trend of landscape change in the Zayanderoud watershed in Iran. For this purpose, in order to map land cover, we used TM images of Landsat 5 and Landsat 8-OLI in 1987 and 2015, respectively. In order to analyze changes of landscape, different metrics in class and landscape levels were calculated using Fragstats 4.2 software. Analysis of obtained maps of land use and cover showed 13% and 92% reduction in farmlands and water bodies and an increase of 205% and 75% in the built up lands and rangelands. Analysis of landscape metrics changes and functional - structural relationship between them during 29 years of this study showed a reduction along with a shrink in agricultural lands in 2015 compared to 1987. This can be justified with reduction in the area and the number of water body patches in the landscape in 2015. Increase in built up lands in 2015 in areas that had developed significantly co-occurred with the reduction of farmlands area in the same zone. According to the results of the study it is now more necessary than ever to care about changes in Zayanderoud watershed due to its high importance especially in central Iran. So, considering changes patterns and conditions are essential in planning and strategic management of the landscape.

Keywords:

Land use/cover, changes, clinical pathology, landscape metrics, Zayanderoud