



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:  
Socio-ecological transitions and bio-cultural shifts”

## Assessment of the Land Reclamation Condition Using Environmental Variables in Ellikkala District, Karakalpakistan

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### Abstract

Adverse amelioration condition of irrigated lands is an increasing problem to maintain sustainable agricultural production in the Central Asian countries, especially in lowlands of the Amudarya and Syrdarya rivers. Establishing systems for analysis of land reclamation condition using environmental information which is difficult or expensive to collect, update, or upgrade, even if valid scientifically, will have limited utility when used for large, complex environments or when used for continuous monitoring. However, combined assessment of available variables is lacking in Uzbekistan in particular and in Central Asia in whole. How can the available data from different organisations be integrated? What are the relationships amongst the factors? These are major issues which are not easily resolved. It is, however, only through an integrated, multi-level, approach that both the land and water management and the existing interactions amongst the individual components of the landscape can be evaluated. In response to these problems, main goal of this study is to explore and review existing assessment methods used in Uzbekistan to assess and map land reclamation condition and find out environmentally sensitive areas, on which further land improvement measures can be taken.

The GIS software, with available soil, vegetation, hydrological and infrastructure data was successfully employed to create thematic layers and to assess land reclamation condition in Ellikkala district, Karakalpakistan. Delineation of environmentally sensitive areas of study area was performed based on thematic layers. Created method in a GIS environment simplifies data handling, provides ease of access to the information acquired and its timely updating, and enhances interpretation by facilitating cross data analysis procedures and the application of sophisticated classifications. The approach also allows identifying and understanding the factors that combine and accelerate land degradation in order to adequately manage the land and its resources.

By noticing the evaluation of environmental factors, the soil (texture), land condition (groundwater table) and water availability (distance to the irrigation systems) have the intensive effect on land reclamation condition throughout the study region. A GIS tool has a potential to generate such as maps that can be used in specific land management improvement programs.

**Keywords:** GIS, Karakalpakistan, land reclamation condition, remote sensing

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