LAND DEGRADATION IN UZBEKISTAN, CENTRAL ASIA

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Annotation. *Land degradation poses a critical environmental challenge across Central Asia and Uzbekistan, driven by a combination of natural forces and human actions. Unsustainable land use in agriculture has led to declining soil fertility and deteriorating soil quality. Furthermore, climate change, shrinking water resources, desertification, soil salinity, and biodiversity loss strongly threaten the long-term sustainability of land resources. Therefore, this research and results in this paper are analysed based on a review of relevant literature.*

Key words: *land degradation, restoration, sustainable land management, soil salinity, Uzbekistan, Central Asia,*

Currently, the major environmental problem that occurs in Central Asia is Land degradation, mostly in Uzbekistan which has affected the potential of the land to support agricultural activities is the region hence increasing food insecurity. According to Umarov et. al (2025), food security problems in Uzbekistan are brought by land degradation issues, and this has also affected the sustainability of ecosystems and the diversity of plant and animal species. One of the main reasons why land in Uzbekistan is becoming unusable is soil degradation which happens because the soil gets too hard and packed down, which is a problem for more than 50% of the irrigated lands.

According to Qadir et. al (2009), research shows that more than 70% of the land is unproductive due to desertification and degradation caused by soil salinity, which currently accounts for 47% of the irrigated lands. According to FAO report (2020), approximately 28.6% the total land area in the country is degraded. A very small portion of Uzbekistan’s land is in good condition with most areas affected whose condition are worsening day by day. This indicates that the possibility of using it in the future is decreasing and that land use is becoming more difficult because of climate change. As a result, even though that ecosystem is improving in

some areas, it is still being damaged, and as soil fertility decreases, the rate of succession is too slow (Ruzmetov 2021). The most degraded areas include Aral Sea, Samarkand, Karakalpakistan, Khorezm, Bukhara and Navoi regions, Kashkadaryo, Surkhandarya and Fergana regions which are the country’s agricultural, pasture and water points Shahid et al. (2013). Degradation in the country is caused by various factors which are both natural and human induced in nature such as arid climate conditions, drought, climate change, and wind erosion while the human drivers include poor agricultural methods like irrigation leading to salinization, monoculture, over grazing, improper water use, and deforestation (Mirzabaev et al. 2020). Additionally, rapid urbanization and urban expansion lead to the decline of green spaces, further accelerating local climate impacts (Ahn and Juraev 2023). This is worsened by the government weak policies on monitoring land management, implementing environmental policies, and corruption in the environmental institutions. Burkhanov et al. (2025), noted that widespread land degradation leads to desertification and deforestation which intensifies soil erosion and salinization, loss of soil fertility, destroy habitats, particularly in the Aral Sea region, loss of agricultural productivity, reduction in biodiversity, increased poverty and migration as well as human health and food supply.

Agroforestry serves as an effective strategy for restoring degraded lands. Integrating suitable tree species into agricultural systems mitigates soil erosion and enhances key soil nutrients, such as nitrogen. This practice offers both ecological advantages and additional income for farmers (World Agroforestry Centre et al. 2015).

In Uzbekistan the expansion of desertification, increasing soil salinization and the growth of degraded pasture pose serious threats to people’s livelihoods and to ecological balance. Improving irrigation systems, ensuring the rational use of groundwater and strengthening management to use resources without harming climatic conditions are essential measures. In addition, proper management and application of land restoration practices, along with the development of new technologies can greatly help address these challenges as well as introduction of new knowledge, methods and technologies by experts as well as continued research and experimentation is also contributing to positive outcomes.

Conclusion

In conclusion, the literature review highlights the critical need to identify key drivers of land degradation, mitigate anthropogenic pressures, and develop systematic practical solutions. Restoring degraded lands, enhancing soil fertility, and

safeguarding biodiversity are critical for establishing sustainable agroecosystems in the face of climate change. Furthermore, promoting rational water resource management and adopting water-saving technologies, such as drip irrigation, play a pivotal role in rehabilitating degraded areas and ensuring long-term ecological sustainability.

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