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The Myth of Carrying Capacity: How Migration and Innovation Reshape Population-Environment Dynamics

The concept of "carrying capacity" assumes a static limit to the number of people an environment can support, but does not take into account migration, urbanization and technological adaptation. Migration is a crucial factor in the population-environment nexus. Migration changes population distribution, resource demand and environmental pressures — often in ways that challenge traditional assumptions about carrying capacity. This paper deconstructs this myth by analyzing how human mobility redistributes the ecological footprint, mitigates localized pressures, and poses new sustainability challenges. Using case studies of rural-urban migration, climate-induced displacement, and cross-border labor flows, we show that migration shifts environmental pressures (e.g., urban congestion vs. rural exodus), enables redistribution of resources (e.g., remittances to finance sustainable agriculture), and complicates Malthusian narratives (e.g., high-density cities often have lower per capita emissions than dispersed populations). We argue that carrying capacity models need to incorporate spatial dynamics (migration networks) and institutional responses (adaptive infrastructure, equitable policies). By looking at the connections between population and environment through the lens of mobility and innovation, this topic can inform policymakers on ways to harness migration for sustainability, not just suppress population growth.

Keywords: Carrying capacity, migration, urbanization, remittance, sustainable development