LandShift Short Paper #11

Socio-Economic Dimensions Of Land-Use Change: Impacts, Acceptance, And Equity

Transforming land-use management across Europe requires region-specific strategies that balance climate mitigation and adaptation, food and biomass production, and biodiversity conservation. LandShift [1,2] aims to inform land-use decisions by providing policymakers and planners with evidence on how changes in land use are associated with employment, income and community well-being, and how these relationships vary across regions and population groups. Researchers at the University of St.Gallen [3,4] examined associations between changes in land cover and socioeconomic indicators in five LandShift regions: Occitanie (France), Basilicata (Italy), Eastern Macedonia and Thrace (Greece), Mazowieckie (Poland) and Kyiv (Ukraine). The study drew on data from FAO, Eurostat, Copernicus, and EFFIS alongside regional Living Space surveys that captured local priorities and concerns [5-8].

Impacts: The socioeconomic indicators associated with changes in land cover varied across the five regions. In Occitanie, associations spanned economic activity, employment, demographics, health, agriculture and tourism. In Basilicata, changes in the extent of urban land were associated with prominent health and mortality indicators. In Eastern Macedonia and Thrace, associations included indicators of agriculture, investment, health, and education. In Mazowieckie, changes in surface-water extent were associated with regional investment, domestic tourism and selected mortality indicators. In Kyiv, associations included business turnover, value added, and sectoral employment. Associations with burned area varied by location. They included higher prices in the livestock and viticulture sectors in Occitanie, worse high-tech employment, health and tertiary educational attainment in Eastern Macedonia and Thrace, and lower self-employment among women and higher growth of chronic illnesses in Basilicata. In the Kyiv region, burned area was associated with lower production, wages and hours worked in heavy manufacturing and logistics. The analysis identified no associations in Mazowieckie.

Acceptance: The socioeconomic indicators did not directly measure social acceptance. Feedback and surveys from the LandShift Living Spaces help identify local priorities and challenges to consider when evaluating specific land-use strategies. Across the Living Spaces, stakeholders highlighted how land-use decisions relate to agriculture, water security, biodiversity, climate adaptation, and local economic development. The emphasis varied by region:

- Water security and climate resilience were most explicitly mentioned in Occitanie, Basilicata and Eastern Macedonia and Thrace.
- In Occitanie and Basilicata, stakeholders also raised the role of food production in sustaining rural economies, soils, and ecosystem services.
- Land abandonment was seen as both a risk and an opportunity in Eastern Macedonia and Thrace, Basilicata, and Mazowieckie.
- In Mazowieckie, ecological restoration and competing land uses intersected with urban expansion and renewable energy infrastructure.
- In Kyiv, stakeholders framed land-use change not only as a sustainability challenge but also as an opportunity to support the return of residents, reconstruction, economic recovery, and alignment with EU standards.

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Equity: Assessing the equity of land-use strategies means asking who can access opportunities and resources, who may face greater risks, and whose priorities are reflected in decisions. The LandShift analysis examined indicators of employment status and job duration, educational attainment, income inequality, participation in agriculture, access to economic opportunities, demographic change, and health outcomes across gender and age.

- *Labour-market inclusion*. In Basilicata, the share of employed young people was negatively associated with urban land. Similarly, in Eastern Macedonia and Thrace, the number of women aged 15-64 employed in agriculture, forestry, and fishing was negatively associated with urban land. Moreover, bare ground was positively associated with unemployment among foreign-born women aged 25-54.
- *Education*. In Eastern Macedonia and Thrace, urban land was positively associated with the percentage of women aged 30-34 with upper-secondary and post-secondary non-tertiary education. It was also positively associated with the number of female students enrolled in master's or equivalent programmes. In Occitanie, surface-water extent was positively associated with selected measures of educational attainment among young women.
- *Income, agriculture, and distributional exposure*. In Eastern Macedonia and Thrace, bare surfaces were negatively associated with income inequality (S80/S20), while urban land was positively associated with agricultural gross fixed capital formation (excluding deductible VAT). In Occitanie, cultivated terrestrial vegetation was negatively associated with total farm production subsidies and positively associated with the net value index for live sheep and goats production at producer prices.
- *Health risks*. In Basilicata, the crude death rate from tuberculosis among the general population was negatively associated with urban land. In Eastern Macedonia and Thrace, the three-year average crude death rate from viral hepatitis among men aged 65 and over was positively associated with urban land. In Mazowieckie, surface water was positively associated with the crude death rate from other accidents among people aged 65 and over.

Implications for regional land-use strategies: The findings can help policymakers, researchers and planners identify local strengths and vulnerabilities, decide which socioeconomic outcomes to examine and monitor in each region and better inform future land-use decisions [8-10]. Stakeholder priorities can guide discussions about how proposed strategies balance food security, economic viability, water resilience, biodiversity, climate mitigation and community well-being. When comparing options, indicators such as job security, women's participation in land-related sectors and health outcomes can help clarify who stands to benefit and who may bear the costs or risks.

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