Topic 6: Land

6.1 Land allocation → 6.2 Sources of inefficiencies and potential remedies

5.1 Land allocation

In principle, the market tends to allocate land to its highest-valued use, as reflected by WTP or WTA.

An example of how the market allocate land uses – considers 3 hypothetical land uses: 1) Residential Development 2) Agriculture 3) Widerness

A Bid rent functions = the relationship between distance to the center of the town or urban area and the net benefits per acre received or the expression of the maximum net benefit per acre as a function of the distance from the center. The cost of transporting both goods and people lowers net benefits per acre more for distant locations (net benefits as a function of distance to center have downward sloping)

The Allocation of Land

This simple example shows that the allocation maximizes the net benefits society receives from the land. It also helps clarify both how land uses change over time and the extent to which market processes are efficient.

Land-Use conversion: Conversion from one land use to another can occur when the bid rent functions shift. Conversion of nonurban land (such as agriculture) to urban uses (such as residential development, commercial, industrial and transport) may occur when the bid rent function for urban development shifts up and the bid rent function for nonurban land uses shifts down.

For examples, 2 sources of land conversion to urban uses in the U.S.

1. Increasing urbanization and industrialization and recreational (such as parks) uses
2. Rising productivity of the agriculture land requires less amount of land to produce the same amount of food.

Land-Use Conversion

In the U.S., the amount of land allocated to agriculture has declined over time, while the allocations within types of agricultural land have changes as well.

Agriculture land ↓ Production of fuel (corn ethanol)↑ due to policy mandate

Agriculture land ↓ Certified organic farms ↑ due to price premium

5.2 Sources of inefficient outcomes and potential remedies

In principle, the market allocates land to its highest and best use. However, in practice, several land attributes and the allocation process can result in inefficient, unsustainable and unjust outcomes. Sources of inefficiencies include:

Market problems: Poorly specified property rights, market power and externalities

Examples:

- **Insecure property rights**: In many developing countries, property rights to land are either informal or nonexistent. Land uses could be determined by first-come, first-serviced basis and there are no costs to the occupiers who do not actually hold the right to the land (poorly defined or poorly enforced property rights). This results in the opportunity costs associated with other potential use of land that could be more socially valuable. Low-valued uses could dominate high-valued uses by default.

  Potential remedies: Establish property rights an mitigate or avoid the problem of over exploitation.
- **Undervaluing environmental amenities:** Positive externalities such as the beneficial ecosystem goods and services associated with a particular land may be undervalued by the landowner as those benefits are not accrued exclusively to the landowner (other can enjoy this benefit for free)

  For example, a large farm --- beautiful views for neighbors, habitat for wildlife in forests (others joined benefits without the need to pay for preserving the land while the owner's private net benefit for agriculture would be lower than the social net benefit curve). In this case, the owner of the farm may decide to allocate land to residential development instead of agriculture by selling the land to developers.

  Potential remedies: direct protection of those land by regulations such as the preservation of wetlands that help protect water quality in lakes, rivers and reduce flood damage by storing runoff from heavy rains and snow melts. A conservation land trust is a non-profit organization that works to conserve land suing a variety of means such as purchase land for permanent protection or accept donations, etc.
- **Incompatible land uses**: The costs of negative externalities associated with the land are not accrued exclusively to the landowner, so the private net marginal cost is lower than the social net marginal cost – inefficient land allocation.

  For example, a large industrial farm creates the costs of water pollution from animal waste to the neighbors. As these costs are externalized, they are ignored in unregulated farm owner's decisions about the land.

  Potential remedies: zoning and setting standards for all properties.

Public sector problems: Inefficient tax and user fee structures. Property tax does not actually reflect the current activity's use and lead to bias against land-intensive activities. For example, tax may not reflect farm values. Inheritance tax problem could lead to motivation for conversion of agriculture land to residential development as the owner incurred the tax costs on inherited land.

Government failure: Public policies sometimes distort land-use allocations. For example, building roads into previously preserved land, lowering transportation costs, etc.

Summary of potential policy instruments.

- **Formalization of property rights:** to protect users from intrusion, transferable development rights, conservation easements
- **Land trusts:** to both reduce the cost and increase the likelihood that efficient preservation can take place.
- **Other public policy options:** Include changes in property and inheritance tax structures and development impact fees to eliminate inefficient incentives and promoting efficient land-use decisions.

Reference:

- **[TL]** – Tietenberg, T. and Lewis, L. Environmental Natural Resource Economics, 2015 (10th edition), Pearson, Chapter 10.