

LECTURE:

**DENSITY AND THE ENVIRONMENT:
RELATING ENVIRONMENTAL POLICIES TO URBAN
STRUCTURES**

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Economic growth is driven by agglomeration and pollution externalities. Both are interrelated via a variable hardly addressed in economic growth theory: density. In this paper, we provide a new environmental growth theory when the spatial dimension matters. We focus on fossil energy-related local pollution and compare growth effects of tax instruments with innovation policies. We find that a balanced growth path (BGP) requires either combining an (increasing) energy tax with an adjustment of spatial housing price gradients (e.g. via commuting subsidies or infrastructure improvements), or an innovation policy that create a constant population density across space. Energy taxes are welfare-superior to innovation policies when the innovation potential of the local economy is high. When urban area is allowed to expand along a BGP, optimal densities and growth rates can be achieved by appropriately setting capital, land, consumption, or property taxes.