

# Hixon Center for Urban Sustainability

FACT SHEET

## Emission Reduction Strategies

### Climate Ready City



### Climate Issue: Urban GHG Emissions

Cities play a critical role in reducing global greenhouse gas emissions, as they have authority over key emissions sources, including:

- energy generation facilities
- waste disposal facilities
- housing
- land-use change
- transport
- buildings and construction.

Around the world, cities are developing strategies to reduce greenhouse gas emissions. However, the science shows that **cities often prioritize strategies that aren't the most effective** at reducing emissions. Understanding which strategies are most effective allows cities to get the best return on their investment.

### Emission Reduction Strategies: Not All Are Equal

To achieve climate goals, cities can develop emission reduction strategies that either focus on a specific sector, or multiple sectors at once.

- **Sector-specific** strategies target a single type of emission source, like buildings
- **Cross-sectoral** strategies target many different types of emission sources. For example: a strategy that targets land use and development includes actions related to afforestation, greening, master planning and transit-oriented development.

This is just one of the choices cities must make when developing emission reduction strategies. But not all strategies are equal. Cities must also consider:

- **Effectiveness:** amount of emissions reductions that can be achieved by the strategy
- **Certainty:** likelihood of a given strategy's success.

When choosing which strategies to prioritize, cities must decide how they wish to balance effectiveness and certainty.

### Strategies & Effectiveness: A Gap

Some strategies are more effective than others. An analysis of 234 case studies on strategies implemented by cities and regions found that:

- Cross-sectoral strategies were more successful for reducing emissions than single-sector strategies
- The most effective and certain cross-sectoral strategies centered on:
  1. Land Use and Development
  2. Circular Economy
  3. Waste and Water Treatment
- The most effective sector-specific strategies focused on electricity and heat. However, these strategies were less certain than others.

Some interventions were very effective in reducing emissions:

- In land use and development strategies, 90% of the emission reductions achieved related to afforestation and greenery
- Within transportation, transportation systems management strategies were more effective, where 85% of impacts in this category aimed to reduce vehicle miles traveled.

### WHAT CAN YOUR CITY DO?

**WHEN** choosing emission reduction strategies, consider both effectiveness and certainty of reduction potential

**PRIORITIZE** cross-sectoral strategies over sector-specific strategies

**REMEMBER**, each city differs in terms of governance, budget, priorities and emission sources. Design emission strategies to suit local context, and consider co-benefits that can be achieved.

To find out more information about reducing urban emissions, contact Professor Angel Hsu at [angel.hsu@unc.edu](mailto:angel.hsu@unc.edu). Fact sheet based off Burley Farr, K., et al. (2023). Cities and regions tackle climate change mitigation but often focus on less effective solutions. Nature Communications Earth and Environment, 4(1). <https://doi.org/10.1038/s43247-023-01108-6>