

The Budgetary Implications of Climate Mitigation and Adaptation for State Governments in the United States

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Motivation

- The financial sums involved in a shift to a low-emission climate-resilient economy will be considerable.
- Much of the discussion around climate policy and funding of mitigation/adaptation activities focuses on central governments.
- Subnational governments – who typically lead the way in infrastructure financing and development – are well-positioned to identify opportunities and enact enabling policy instruments to support climate adaptation and mitigation.
- Under the U.S. federalist system, the federal government devolves much of the responsibility for infrastructure financing to state (and local governments)
 - The efficiency case for decentralized provision of public goods – e.g. Oates (1999), Tiebout (1956)

Research overview

1. Identify and classify the types of policy instruments and activities that state governments in the US have available for mitigation and adaptation
2. Measure the extent to which state governments are currently pursuing these activities in terms of expenditures. We conduct a comprehensive review of state budgets:
 - Operational expenditures
 - Capital expenditures
 - Tax expenditures (Foregone revenues)
3. Benchmark the current *level* of spending and *rate* of spending growth
4. Evaluate budget implications for mitigation and adaptation targets, and offer policy recommendations on how to manage these needs

Policy categories

- The IPCC classifies subnational policies aimed at mitigation and adaptation into different categories:

Energy	Transport	Buildings
Industry	Agriculture, Forestry, and Other Land Use	Individual, Human Settlements, and Infrastructure

- Policy *instruments* can also be classified as follows:

Economic [Taxes]	Economic [Tradable Allowances]	Financial Incentives/State
Financial Incentives/Local	Financial [Loans]	Regulatory Approaches
Information Programs	Voluntary Actions	

- While these categories provide a conceptual framework, in practice it is difficult to classify some activities as completely climate related.
 - Wetland restoration may help with climate change adaptation, but it is not the only reason an activity is undertaken.

Budget categories

- These budgets may not provide a sufficiently narrow level of detail to identify adaptation and mitigation activities, even notwithstanding the fact that such categories may overlap with other purposes

Colorado, Department of Public Health and Environment (FY 2015- 2016)

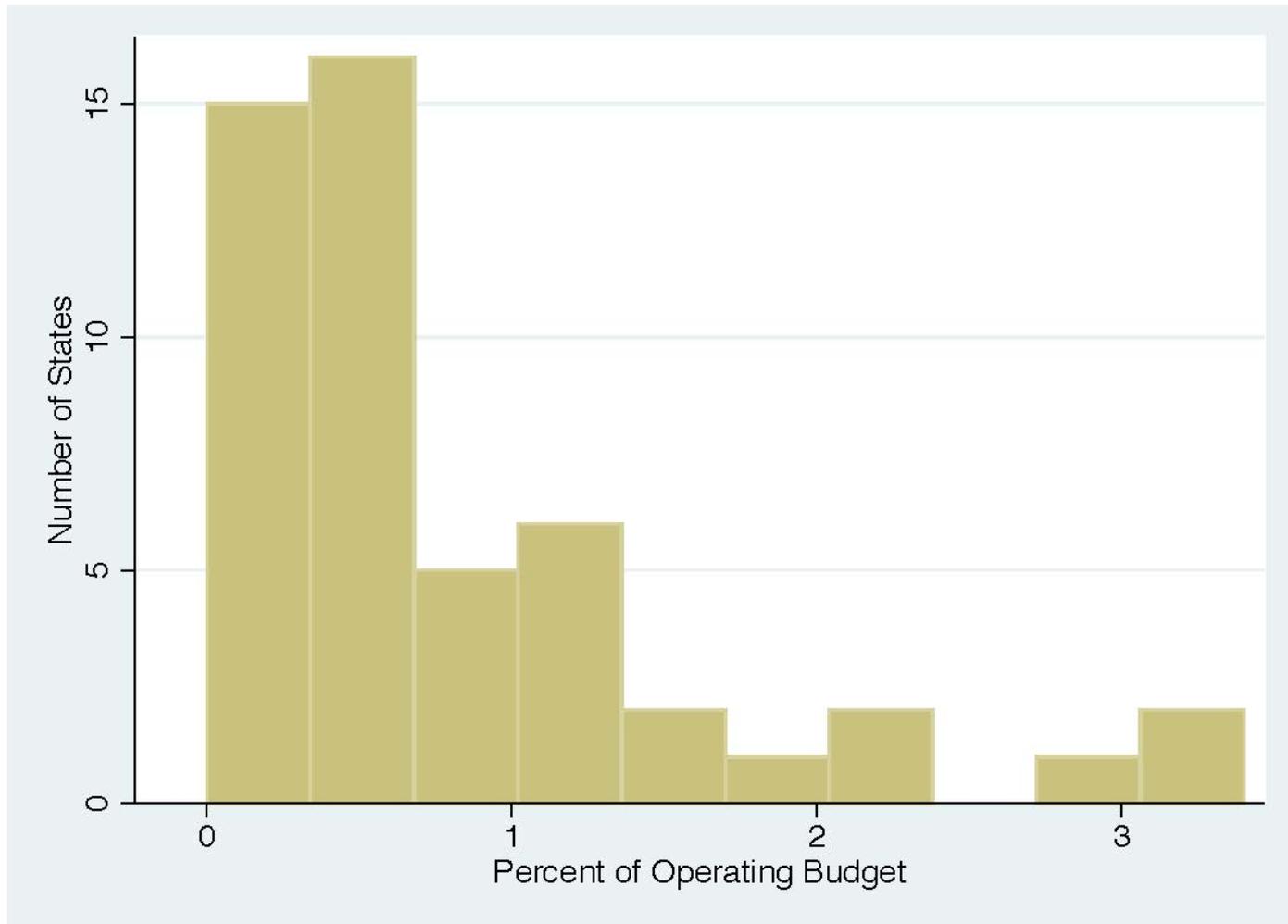
Breakdown of Total Appropriation by Administrative Section

Administration and Support	59,014,189
Center for Health and Environmental Information	14,189,321
Laboratory Services	13,655,177
Air Pollution Control Division	24,533,595
Water Quality Control Division	24,844,271
Hazardous Materials and Waste Management Division	31,921,452
Division of Environmental Health and Sustainability	8,497,296
Disease Control and Environmental Epidemiology Division	98,769,571
Prevention Services Division	214,337,672
Health Facilities and Emergency Medical Services Division	28,328,178
Office of Emergency Preparedness and Response	16,257,500

Operating expenditures

- We collected state operating budgets from the most recent year available
- Estimates depend on level detail provided in the state budget – e.g. environmental departments, special funds, line items covering specific programs.
- To provide a first order estimate for benchmarking, we use those few states that provided specific detail on mitigation and adaptation expenditures – e.g. North Carolina – to isolate climate related from all environmental expenditures

Estimated state operating expenditures



Capital expenditures

- States' capital budgets capture the annual expenditures for capital projects
- States' capital improvement plans document projected capital spending (~ 5 - 10 year) for construction and maintenance of long-lived infrastructure
 - Often financed with bonds
 - For example, energy efficient lighting, flood and storm water management, and coastal and dam projects
- The capital improvement plan enables us to know not only how many climate-related capital projects the state is starting, but also the trajectory of this spending
- Preliminary data does not show increases over current levels of spending

Tax expenditures

- We review state tax expenditure reports to determine what tax breaks states are offering to incentive environmental activities
 - Example: Solar energy tax credits, PHEVs
- Though not a resource outflow, these represent foregone revenues and are equivalent to direct spending on environmental priorities
- Experience at the federal level shows that these types of expenditures can represent a sizeable amount of the budget

Implications for future budgets

- Current expenditures for mitigation and adaptation show substantial variation by state
- Are states projecting growth in mitigation and adaptation activities?
 - Capital improvement plans and multi-forecasts for operating expenditures may be used to forecast the growth of spending over the short-term for these activities
- Future federal policies may have a large influence on state climate-related activities and spending
- Integration of climate change with all activities (e.g. California Executive Order B-30-15)

Policy recommendations

- By comparison to the federal level, state climate related spending is poorly understood.
 - Identification of these expenditures is difficult
- This may be problematic as states often take the lead on infrastructure
- Next step:
 - Identifying gaps and expenditure implications
 - Mechanisms for covering these needs, e.g. green bonds