Lecture # 12 – Environmental Federalism

I. Federalism and Environmental Protection: Theory

- What works in a unitary model of government need not work in a federal system
- We want climate policy to be cost effective
    1. Leaving policy to sub-national units of government unlikely to be cost effective
    2. But, policy designed for a unitary model of government may have unexpected outcomes in a federal system
        - Health care is a good example here. Policy assumed states would create exchanges. Not all states did, leaving federal government to pick up the slack.
- Environmental federalism
    - "The study of normative and positive consequences of shared role of national and subnational units of government in controlling environmental problems."
    - Normative: control of externalities and provision of public goods works best when government authority addressing the problem matches the geographic extent of the problem.
    - Positive: asks why distribution of authority happened as it did.
        - EU-ETS as example
            - Decentralized system successful politically but undermined performance
    - Shobe and Burtraw list three types of pollutants: We'll look at examples of each:
        - Local pollutants
            - Locality balances costs and benefits of protection
        - Regional spillovers
            - Pollution from one state flows into a neighbor (e.g. SO_2 emissions, pollution in a river)
        - Global pollution
            - E.g. greenhouse gases, ozone-depleting chemicals
    - Note that environmental problems are rarely only "national"

- Institutional constraints on policy development
    - Legal limits
        - In the US, the Constitution sets limits on the relationship between state and federal government.
        - In the EU, EU principle of subsidiary determines relationships
    - Economic limits
        - States operate as small open economies in a national and global environment
        - Potential migration of labor and capital places limits on what they can do
            - A bigger concern for smaller jurisdictions
            - *Q: Can California do things that a smaller state could not?*
            - As a result, race to the bottom often used as justification for national regulation for climate change
    - Availability of policy options
        - Command and control
            - National minimum environmental standards
            - Typically a meet or exceed standard
                - States often given flexibility as to how they meet their goals
                - Note that this was the case for the Clean Power Plan
        - Bribe and subsidize
            - E.g. withhold highway funds unless drinking age is 21
            - Withholding funds cheaper than a subsidy
        - Market instruments
            - Creating a national market encourages cost-effectiveness

- There are three key theoretical questions:
    - Choosing the extent of environmental control
    - Deciding on the methods of pollution control to use
    - Determining and funding the basic research agenda for an environmental problem

- Choosing the extent of environmental control -- which level of government will choose the most efficient level of environmental protection? Some key considerations are:
    1. Externalities – do the costs and benefits extend beyond the jurisdictional boundaries of a state or local government? If so, centralized would be better.
        - The answer is clear when there are no externalities, or when externalities are significant (e.g. SO_2 and acid rain), but what about when externalities are small (e.g. how much space should a town give to a new park – some people from outside the town will enjoy it)?
        - Advantages of localized decision making when externalities are small:
            - Localities can take advantage of unique factors.
            - Because tastes differ, the end result is different types of communities, so that individuals can sort themselves by preferences.
            - Most standards set minimum, not maximum, levels of control. Therefore, welfare losses occur in communities with preferences for less control.
        - Apply to each type of pollutant
            - Local pollutants
                - Locality balances costs and benefits of protection
                - Race to the bottom could be a concern, but limited evidence of this
                - There are examples of jurisdictions doing more than required
            - Regional spillovers
                - Options:
                    - Bargaining among neighbors
                    - Shifting control to national level
                        - What if national level is too broad (e.g. regional pollution)?
            - Global pollution
                - Here, even national governments have incentives to free ride

- Are there other relevant externalities?
    - Intergenerational – ability of local government to consider future generations depends on whether future benefits affect property values or whether government thinks local residents might move before enjoying benefits.
    - Safety externality – if people are paternalistic, they might want to protect citizens in other jurisdictions.
        - If so, why make them pay the cost? Is this an argument for grants for water infrastructure, for example?

2. Information – which level of government has the most information about the costs and benefits of reducing pollution?
    - In general, federal government has better information about basic health and environmental effects of pollution.
    - Local governments have better information about unique local conditions.
        - Preferences
        - Demographic characteristics (e.g. number of elderly or children who will suffer more from air pollution)
        - Factors affecting costs of compliance (e.g. local labor rates)
        - Geographic or biophysical concerns (e.g. type of fish in local water)
    - However, the federal government can transmit general information to local governments, giving local governments an advantage.
        - Easier for federal government to transmit the same set of information to several localities than for local governments to send different sets of information to the federal government.
    - When externalities are present, there is a tradeoff
        - Federal government better for dealing with externalities, but local governments have more information.
            - The ideal solution is *flexible* federal regulations
3. The costs of decision making – Does choosing a standard entail large decision making costs? If so, centralized solution better.
    - The federal government can take advantage of economies of scale.
        - However, the federal government can lower decision making costs for local governments by providing information: e.g. guidelines or suggested standards based on technical information.

4. Interjurisdictional competition – Will a lack of federal standards lead lower levels of government to engage in competition to attract industry, and will that in turn lead to standards that are less than optimal? If so, centralized solution better.
    - There is no empirical evidence on whether governments choose less than optimal levels of protection.
    - Also, firms will still choose to locate in areas with lower control costs.
        - These are likely to be areas with low initial levels of pollution.
5. Government objectives and capabilities – Are all levels of government trying to achieve the maximum welfare of constituents? Do all levels of government have the resources and expertise to carry out the standard they choose?
    - Even if local governments set the standards, enforcement may be left to state or federal governments.
    - Environmental justice concerns might also fit here.
6. Innovation
    - States can act as laboratories for new polices.
    - For example, California's climate change initiatives include many smaller programs (e.g. the million solar roofs program) designed to reduce emissions. This allows other states to see what works and what doesn't

- Deciding on the Methods of Pollution Control -- Having set a standard, what level of government is most likely to choose an efficient method of pollution control in order to achieve it Some key considerations are:
    1. Information – which level of government has the most information to evaluate cost-effectiveness?
        - Local governments have more information on specialized conditions.
            - Composition of local industry
            - Atmospheric and geological conditions
        - Federal government likely to have better information about technologies.
    2. Economies of scale in production – when control devices are needed for widespread use, manufacturers can take advantage of economies of scale.
        - Example: better to have one standard for recycled newsprint than different standards in every state.
        - Pollution control for cars is another example – automakers fight different standards for cars, and NE states use California Low Emissions Vehicle program to meet air quality standards so that we don't need too many different types of cars in U.S.
    3. Externalities – are there externalities from selecting certain controls?
        - Examples:
            - Reducing emissions by raising the height of a smokestack affects neighboring regions.
            - Job losses from regulation, such as coal miners in West Virginia
            - Effects on future generations (e.g. hazardous waste)
            - Blocking pipelines or transmission lines affects neighboring states
    4. The costs of decision making
        - Federal government can lower costs to local governments by providing information.
    5. Government objectives and capabilities
        - Will lower levels of government put too much emphasis on attracting or protecting business?
            - Consider, for example, Illinois requirement that utilities burn coal from Illinois, which has a high sulfur content.

- Determining and Funding the Basic Research Agenda
    - Information is a public good. Thus, the federal government is best suited to carry out the research agenda.
        - Local government could be best suited for problems with a limited geographic scope, because the free rider problem is not as large.

II. Local Pollutant Example: Safe Drinking Water Act

- Last week we discussed the Safe Drinking Water Act. For small communities, the costs of complying with the SDWA can be large.
- This leads into a general question about setting drinking water standards. *Should drinking water standards be set at national or local level?*
    - Some issues to consider
        - Does the federal government have additional information for setting standards?
        - How do costs vary across communities? Are uniform standards efficient?
        - Who should pay?
        - What alternatives are available?

III. Global Pollutant Example: Climate Change

- U.S. climate policy background
    - In 2007, the U.S. Supreme Court ruled that the Clean Air Act gave the EPA power to regulate greenhouse gases (Massachusetts v. EPA)
    - Let to EPA's 2009 endangerment finding, which stated that greenhouse gases threaten public health and welfare
        - Required federal government to regulate greenhouse gases
    - Nonetheless, comprehensive federal policy has been minimal.
        - Rather than a nationwide emissions limits, greenhouse gases have been regulated in a piecemeal fashion, such as through vehicle fuel efficiency standards or President Obama's Clean Power Plan for electricity, which was later overturned.
        - The Biden administration largely used subsidies to encourage spending on clean energy
    - However, several states have binding climate policies
        - Overall, these laws cover about 10% of US emissions
            - In 2025, California re-authorized its "cap-and-invest" program through 2045, with a goal of net zero emissions by 2045
            - Other carbon markets include Washington state and the Regional Greenhouse Gas Initiative (RGGI)
        - New York has a target to reduce greenhouse gases by 40% by 2030, but is not on target to meet the goal
    - Many states also use smaller policies to encourage clean energy
        - 28 states have renewable energy standards
        - 30 states have EV incentives
            - California will ban the sale of new gas-powered cars by 2035

- We'll discuss the following questions in class:
    1. Given that climate change is a *global* problem, what are the arguments FOR addressing climate policy at the national level?
    2. What are the arguments for addressing climate policy at the state & local level?
    3. How do state and local policies interact?

- Why is national action desirable for climate change?
    - Makes international cooperation easier
    - Minimizes leakage
    - Uniform national price signals minimize costs of compliance
    - Safeguard nationally-agreed upon levels of fairness and protection of individual rights

- Why might state-level action be preferred?
    - Perceptions of trust, fairness, and reciprocity
        - Local participation in national policy regimes promotes trust
    - Engages participants at the local level
    - Promotes local policy innovation
        - Note the range of different policies (RPS, subsidies, etc.) used to promote renewable energy
    - Note that state support will be necessary for an effective national policy

- Interaction of state and local policies
    - States could put more stringent policies on top of a national carbon tax
    - National cap and trade would pre-empt state policies
        - Because of the national cap, any state policy that was more stringent would allow other states to do less
        - Local emissions would fall, but national emission would not
            - Could only reduce national emissions if the state bought and retired national permits
    - Other policies also matter
        - For example, whether or not electricity markets are regulated affects how much utilities can pass on the costs of national regulation to consumers
            - Regulated producers can pass the costs on through average cost pricing
            - In competitive markets, costs only passed on if the polluting technology is the marginal technology, and thus the one setting market prices
        - Most policy analysis ignores the many smaller policies that local governments use, such as building codes
            - These may be slow to change even as national price signals change

- Potential for policy innovation
    - By reducing differences among states, national policy facilitates interstate commerce, but reduces the ability of states to act as policy laboratories
    - States have taken the lead on climate policy in the U.S.
    - Example: California vehicle GHG emission standards
        - California was given permission to exceed national standards in the 1970 Clean Air Act
            - California had worse air quality than other states, and already implemented vehicle emission standards before the 1970 CAA
        - The auto industry wanted national regulations to avoid having to produce different vehicles for different states.
        - As a result, other states can follow national standards or adopt California standards, but cannot develop their own standards
        - In 2004, California's Air Resources Board developed rules to reduce GHG emissions from vehicles
            - Challenged in court, but eventually approved
        - These were subsequently adopted as national standards in 2011
    - In other examples, several states have tried trading schemes such as water trading in Wisconsin and North Carolina.
    - Challenges with states as policy innovators
        - Local policies often driven by local interests
            - These might not be related to climate change
        - Policy experiments create entitlements that are hard to eliminate
            - Those who benefit from a local policy will want to keep it
        - Policies often not evaluated ex post
            - Thus, policies that other states follow might not be effective policies
    - Local policies can help build a national consensus

IV. Regional Pollutant Examples

- Examples of regional air pollution problems include the Clean Air Act's consideration of state pollution on neighboring states

- The reading provides an example between Maryland and Virginia
    - To protect drinking water, Maryland restricts the use of fertilizer made from sewage sludge
        - Sewage sludge can be a source of : Per- and Polyfluoroalkyl Substances (PFAS)
    - Because of lost customers in Maryland, producers of fertilizers sought more customers in Virginia.
    - Benefits of sewage sludge fertilizer
        - Rich in nutrients
        - Spreading it on farms reduces sludge sent to landfills
        - Reduces use of synthetic fertilizers made from fossil fuels
    - Costs of sewage sludge fertilizer
        - PFAS increase cancer risk
        - Can run off fields and contaminate local waterways
    - While the EPA has some fertilizer regulations, it does not regulate levels of PFAS in fertilizer
        - As a result, regulation left to states.
        - Maine was the first to ban the use of sewage sludge as fertilizer

- The ability to block infrastructure projects also has regional implications
    - Example: The Clean Water Act allows states to veto federal permits for energy projects that could contaminate local water
    - This allows states to block new gas pipelines and new electric transmission lines
    - Some states have used justifications beyond water, such as the need to curb fossil fuels, as justification for blocking projects.
    - The Trump administration proposes limiting this power, allowing states to only consider the direct water quality effects of a project.
    - ***Question*:** Is this limitation appropriate?