Governmental Innovation Mechanism Choices (with reference to Climate Change)

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Numerous options exist for governments to develop technologies. These include: (1) procurement, using government purchasing power to demonstrate commercial viability and reduce risks of market entry; (2) direct development, using government funding and personnel to develop technologies; (3) subsidies, including tax credits, refunds, and other mechanism that fund research and development (particularly through universities) and including purchases (such as feed-in tariffs) that promote market substitution behaviors; (4) various government encouragements (such as voluntary programs and certifications) and threats (of more aggressive government regulation, such as compulsory licensing or antitrust scrutiny); and (5) ex-post market entry regulatory actions (including acting on threats and directly regulating price or supply). Few studies exist of the comparative performance and relative costs and benefits of choosing any of these mechanisms. Yet trillions of dollars will soon be spent on upgrading our energy, transportation, and other infrastructure and on purchasing mitigation and adaptation technologies to respond to climate change. This article will discuss the current state of analysis and will propose comparative tests that could be developed and used to determine what government choices may work best over time, in what cultures and circumstances.