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Climate Change and Water Supply

Issue: Healthy forests provide clean water, protection against sedimentation, and are the most cost effective water filtration system available. About 80 percent of the Nation's scarce freshwater originates in forests which cover about a third of the United States. Climate change, however, is affecting forest health and impacting sustainable water supplies for communities, farms, industry, and energy production.

Key Points:

- Climate is a fundamental driver of the water cycle. It determines how much water is available (supply) and how much we need (demand).
- Many of the problems related to the sustainability of water supplies relate to climate change and extreme events – too much water (floods) or not enough water (extended droughts).
- During the next 25 years, many parts of the world will experience large increases in water demand.
- With increased temperatures, longer growing seasons, and more leaf area, plants may need water (even with CO₂-induced increases in water-use efficiency), leaving less runoff for irrigation and domestic uses.
- Across the contiguous U.S., 54% of the water supply originates from forested lands, 25 % from agricultural lands, and 8% from rangelands.
- Eighteen percent of the water supply in the United States – and over 50% in the western United States - originates in the National Forests.
- Deep groundwater in the high Cascade Range in the Pacific Northwest may buffer the effects of climate variability for that area, sustaining waterflow in drought years.
- Urbanization is contributing to poor water quality along the southeastern coast of the US.
- Several strategies may help to secure clean water supplies but they are costly (e.g., expansion of water treatment facilities, new water-pricing policies, innovative technologies for conserving water, mitigation practices to improve watershed condition).
- During the past 35 years, withdrawals for industrial production and thermoelectric cooling in the US have dropped. If these trends continue, withdrawals in the US over the next 40 years will stay below 10% of the 1995 level despite a 41% expected increase in population.

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