DAY 2 | Impacts on Minnesota's Economy and Natural Resources

Presenter: Jessica Hellmann, Institute on the Environment and Department of Ecology, Evolution and Behavior

I. Introduction

Presenters: Jessica Gutknecht, Department of Soil, Water and Climate
Bonnie Keeler, Humphrey School of Public Affairs
Vishnu Laalitha Surapaneni, Division of General Internal Medicine
Lee Frelich, Department of Forest Resources

II. Across the Economy: Climate Impacts by Sector

A) Agriculture

Main points:

a) Minnesota is a top U.S. producer and exporter of agricultural plant and animal products that are impacted in different ways by climate change.

b) More frost-free days and freeze-thaw events will lead to increased crop pests, degraded soils, and lower apple yields.

c) Warmer summer temperatures will lead to yield declines in plant and animal products.

d) Wet conditions and flooding from extreme events cause erosion, are problematic for field work, and increase crop disease and crop damage.

e) Highly variable summer rains and temperature patterns within or between years will increase risk to farmers, make management decisions difficult, and may increase rural poverty.

B) Cities

Main points:

a) Climate projections indicate Minnesota cities will see more very hot days (>90F), fewer very cold days, and more frequent heavy precipitation events.

b) Increased heat affects energy and water use, can decrease productivity (especially for outside workers), can exacerbate air and water quality concerns, and lead to increased heat-related illness, especially among the elderly.

c) Climate change poses threats to urban infrastructure, especially as more frequent flash flooding overwhelms stormwater systems and damages roads, bridges, homes, and buildings.

C) Public Health

Main points:

a) Climate change is already affecting the health of Minnesotans, causing a rise in allergies and asthma, heat-related illness and tickborne diseases.

b) Children, elderly, pregnant women, low- income families, and racial and ethnic minorities living in poverty bear the brunt of climate impacts.

c) What's good for our health is good for the planet too (e.g., vegetarian diet and walking/biking improves personal health and reduces damage to the climate).

d) An urgent transition to a fossil-fuel free, zero carbon energy system will bolster clean air and clean water health benefits in addition to limiting our damage to the climate.

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D) Biological Resources

Main points:

a) Minnesota is a unique place, where boreal forest, temperate forest, and prairie biomes come together.

b) Warming climate will shift biomes to the north and east, with loss of boreal forest and increases in prairies in Minnesota.

c) Other factors, including invasive species, deer, insects, storms, and fires, will reinforce the impacts of warming.

d) Smaller impacts on natural resources will be easier to manage.

– Q and A –

Presenters: Jessica Hellmann, Institute on the Environment and Department of Ecology, Evolution and Behavior
Jason Hill, Department of Bioproducts and Biosystems Engineering

III. Solutions

A) Adaptation and Resiliency and its Relationship to Mitigation

Main points:

a) We will need to make adjustments across Minnesota to keep or protect the things we value as the climate changes (adaptation).

b) How we adapt will affect greenhouse gas emissions; it can reduce emissions or make them worse.

c) We can invest now in strategies that increase the resiliency of people and places to climate change; larger amounts of climate change may overwhelm that resiliency.

d) We cannot think of climate change in isolation; it is affected by and can drive other changes that affect our state and economy, e.g., demographic change.

e) Scenario planning is a tool to consider alternative futures and identify win-win strategies.

– Q and A –

B) Examples of Adaptation in Agriculture (an example sector)

Main points:

a) Agriculture responds to short-, medium-, and long-term trends. Farmers continually adapt to current and anticipated conditions.

b) Agriculture will need to respond to environmental and economic changes and increased uncertainty in decision making.

c) Adaptation should be attentive to the concerns and needs of farmers and the public, and there are many such opportunities.

d) Agriculture can adapt to climate change while also playing a role in climate change mitigation (emission reduction).

– Q and A –

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IV. Conclusion