

Idaho Climate-Economy Impacts Assessment

Snapshot: Infrastructure

Infrastructure, Climate, and Idaho's Economy

Infrastructure consists of basic facilities and networks needed for the operation of Idaho's economy. Infrastructure includes road and rail systems, airports, water and wastewater facilities, energy networks, and information and communication networks. These essential systems can be severely impacted by changes in weather events and climate.

Over 50% of bridges managed by the state are past their intended lifespan.

In 2018, flooding cost Madison County \$475,000, 9.5x their average annual road budget.

Changes in climate

Warming temperatures
Diminishing snowpack
Increasing spring precipitation
Increasing peak streamflow
Decreasing summer streamflow
Decreasing summer precipitation

Increasing hazards

Floods
Landslides
Mudslides
Avalanches
Drought
Wildfires

Economic risks

Increasing cost of maintenance, materials, and repairs or replacements
Growing electricity interruptions
Redesigning management systems
Delaying transportation of goods and people

Changes in Climate Impact Idaho's Infrastructure

Extreme weather events can have detrimental effects on infrastructure. Weather-related disruptions in one infrastructure system, such as stormwater management, often cascade into other systems, such as roads and energy, which can increase economic impacts. A few key risks to each of Idaho's infrastructure systems:



Communication

- Increasing likelihood of avalanches, mudslides, and wildfires impacting communication transmission lines could result in rural communities being cut off from communication services.



Energy

- Increasing likelihood of avalanches, mudslides, and wildfires, impacting substations and power transmission lines.
- Reduced efficiency of hydropower due to changes in precipitation.



Transportation

- Increasing flood risk, embankment instability, bridge erosion, and road surface damage can increase the frequency with which areas become inaccessible due to road closure.
- Temporary interruption of flights and rail due to extreme heat.



Water

- Unpredictable fluctuations in the water supply, and increased risk of flooding to water supply and water treatment infrastructure.
- In lagoon wastewater systems, increasing summer temperature may impact the treatment capacity of biological systems.

Preparing Idaho for Impacts to Infrastructure

Climate change is likely to threaten infrastructure systems in two fundamentally different ways. Short-term impacts, such as extreme weather events, are difficult to predict and prevent. Long-term impacts, such as increasing energy demand, are easier to predict and prepare for. When incorporating climate change into planning efforts, it is important to plan for both an increase in extreme weather-related events and a slowly changing climate baseline.

Short-term

- Disruptions caused by weather-related events, such as avalanches, floods, mudslides, and wildfires, will increase.
- Weather-related events are expected to rise in frequency and intensity, which will increase costs to respond to and repair damage.

Long-term

- Utilizing models that take into account future climate conditions, infrastructure managers can rethink facilities, operations, and maintenance practices.
- Adapting to design standards, modifying operations, and conducting routine maintenance can prevent critical infrastructure interruptions.

Case Study: Landslide Impacts

In February 2016, a massive landslide occurred in Idaho County, burying State Highway 14, one of only two roads leading into Elk City. A single lane U.S. Forest Service road offered an emergency route. Because this road was not designated for normal traffic, travel into the community was restricted to short windows each day. This made it difficult for residents to travel to work, shop for food and other essentials, and more. In addition, more than 650 residents of Elk City and the surrounding communities lost power, leaving them vulnerable to the cold. It took several weeks and \$1.5 million to restore critical access for residents.

Opportunities for Adaptation: Emphasizing Connectivity

Idaho is a sparsely populated and rural state. Reliable access to communication, energy, transportation, and water services for rural communities is extremely important, especially with increases in weather-related events.

Idaho has a limited number of roads and infrastructure that connect rural communities to urban centers. This means that extreme weather events also can lead to significant delays in travel and transportation of goods.

Access to reliable power supplies, as well as phone and internet service, is essential for communities to prepare for and withstand weather-related emergencies. Microgrids are one option that enhance local resilience to increasing extreme weather events and protect critical community electricity infrastructure.

Interested in learning more about economic impacts and Idaho's infrastructure?

For further information, resources, tools, references, and additional reports, please visit www.uidaho.edu/iceia



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