

Checklist of Historical, Current, and Potential Drought Impacts

This checklist of drought's effects can help planners anticipate problems that might arise in future droughts. Many planners find it useful to identify the "drought of record" (the worst ever recorded), examining its actual effects and projecting what the effects would be if the same drought were to occur under current conditions and in the future.

If enough time, money, and personnel are available, it might be useful to conduct impact studies based on common droughts, extreme drought(s), and the "drought of record" for your region. This would yield a range of impacts related to different degrees of severity.

H = Historical Drought

C = Current Drought

P = Potential Drought

H C P Economic:

Costs and losses to agricultural producers—

- Annual and perennial crop losses
- Damage to crop quality
- Income loss for farmers due to reduced crop yields
- Reduced productivity of cropland (wind erosion, long-term loss of organic matter, etc.)
- Insect infestation
- Plant disease
- Wildlife damage to crops
- Increased irrigation costs
- Cost of new or supplemental water resource development (wells, dams, pipelines)

Costs and losses to livestock producers—

- Reduced productivity of rangeland
- Reduced milk production
- Forced reduction of foundation stock
- Closure/limitation of public lands to grazing
- High cost/unavailability of water for livestock
- Cost of new or supplemental water resource development (wells, dams, pipelines)
- High cost/unavailability of feed for livestock
- Increased feed transportation costs
- High livestock mortality rates
- Disruption of reproduction cycles (delayed breeding, more miscarriages)
- Decreased stock weights
- Increased predation
- Range fires

Loss from timber production—

- Wildland fires
- Tree disease

H C P Economic (cont.)

- Insect infestation
- Impaired productivity of forest land
- Direct loss of trees, especially young ones

Loss from fishery production—

- Damage to fish habitat
- Loss of fish and other aquatic organisms due to decreased flows

General economic effects—

- Decreased land prices
- Loss to industries directly dependent on agricultural production (e.g., machinery and fertilizer manufacturers, food processors, dairies, etc.)
- Unemployment from drought-related declines in production
- Strain on financial institutions (foreclosures, more credit risk, capital shortfalls)
- Revenue losses to federal, state, and local governments (from reduced tax base)
- Reduction of economic development
- Fewer agricultural producers (due to bankruptcies, new occupations)
- Rural population loss

Loss to recreation and tourism industry—

- Loss to manufacturers and sellers of recreational equipment
- Losses related to curtailed activities: hunting and fishing, bird watching, boating, etc.

Energy-related effects—

- Increased energy demand and reduced supply because of drought-related power curtailments
- Costs to energy industry and consumers associated with substituting more expensive fuels (oil) for hydroelectric power

Water suppliers—

- Revenue shortfalls and/or windfall profits
- Cost of water transport or transfer
- Cost of new or supplemental water resource development

Transportation industry—

- Loss from impaired navigability of streams, rivers, and canals

Decline in food production/disrupted food supply—

- Increase in food prices
- Increased importation of food (higher costs)

Environmental:

Damage to animal species—

- Reduction and degradation of fish and wildlife habitat
- Lack of feed and drinking water

H C P Environmental (cont.)

- Greater mortality due to increased contact with agricultural producers, as animals seek food from farms and producers are less tolerant of the intrusion
- Disease
- Increased vulnerability to predation (from species concentrated near water)
- Migration and concentration (loss of wildlife in some areas and too many wildlife in other areas)
- Increased stress to endangered species
- Loss of biodiversity

Hydrological effects—

- Lower water levels in reservoirs, lakes, and ponds
- Reduced flow from springs
- Reduced streamflow
- Loss of wetlands
- Estuarine impacts (e.g., changes in salinity levels)
- Increased groundwater depletion, land subsidence, reduced recharge
- Water quality effects (e.g., salt concentration, increased water temperature, pH, dissolved oxygen, turbidity)

Damage to plant communities—

- Loss of biodiversity
- Loss of trees from urban landscapes, shelterbelts, wooded conservation areas
- Increased number and severity of fires
- Wind and water erosion of soils, reduced soil quality
- Air quality effects (e.g., dust, pollutants)
- Visual and landscape quality (e.g., dust, vegetative cover, etc.)

Social:

Health—

- Mental and physical stress (e.g., anxiety, depression, loss of security, domestic violence)
- Health-related low-flow problems (e.g., cross-connection contamination, diminished sewage flows, increased pollutant concentrations, reduced fire fighting capability, etc.)
- Reductions in nutrition (e.g., high-cost food limitations, stress-related dietary deficiencies)
- Loss of human life (e.g., from heat stress, suicides)
- Public safety from forest and range fires
- Increased respiratory ailments
- Increased disease caused by wildlife concentrations

Increased conflicts—

- Water user conflicts
- Political conflicts
- Management conflicts
- Other social conflicts (e.g., scientific, media-based)

H C P Social (cont.)

Reduced quality of life, changes in lifestyle—

- In rural areas
- In specific urban areas
- Population migrations (rural to urban areas, migrants into the United States)
- Loss of aesthetic values
- Disruption of cultural belief systems (e.g., religious and scientific views of natural hazards)
- Reevaluation of social values (e.g., priorities, needs, rights)
- Public dissatisfaction with government drought response
- Perceptions of inequity in relief, possibly related to socioeconomic status, ethnicity, age, gender, seniority
- Loss of cultural sites
- Increased data/information needs, coordination of dissemination activities
- Recognition of institutional restraints on water use