WRANE
Water Research, Assessment and Networking Ecosystem

Water and You

Presented by:

Why is water important?

Outline

1. Why is water important to society?
2. What are the consequences of too much or too little water?
3. How will water issues shape the future?

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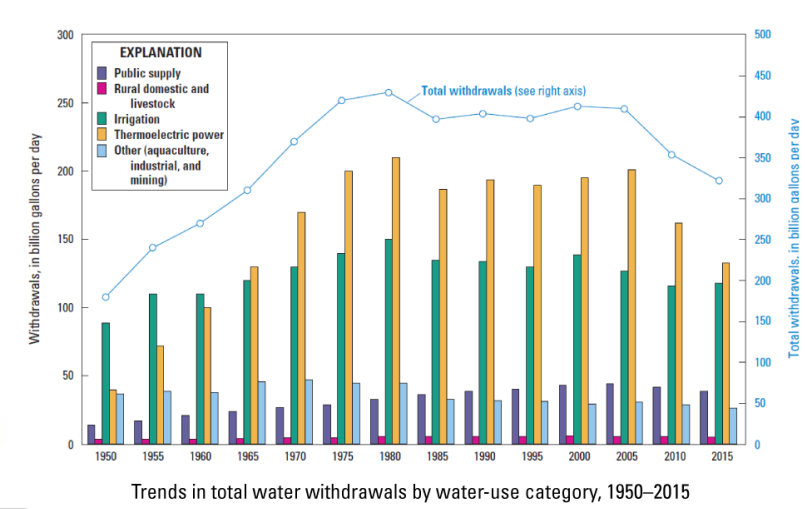
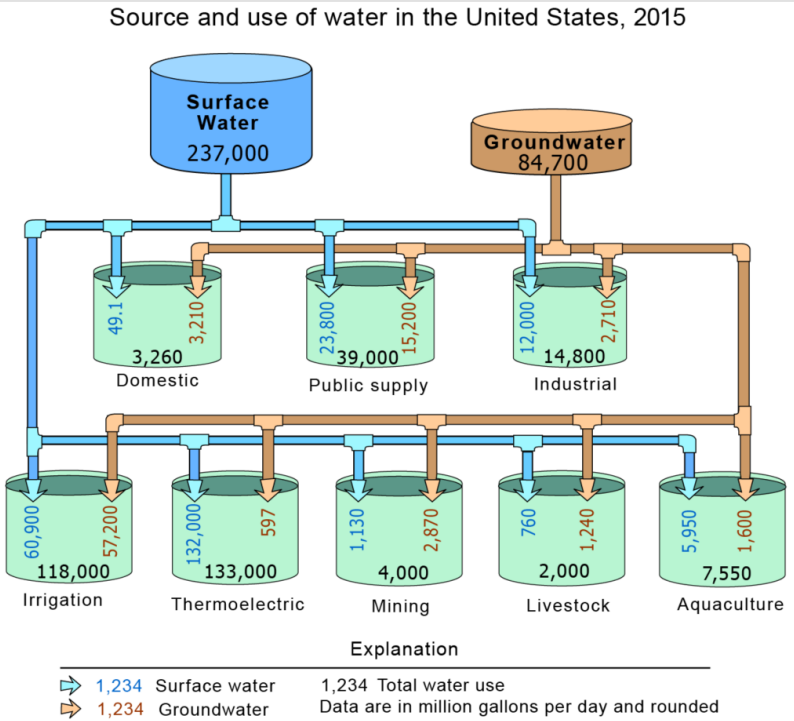
How do you use water?

- In 2015, the US used an estimated 322 billion gallons per day (Dieter et al., 2018)



Trends in total water withdrawals by water-use category, 1950–2015



www.usgs.gov/water-resources

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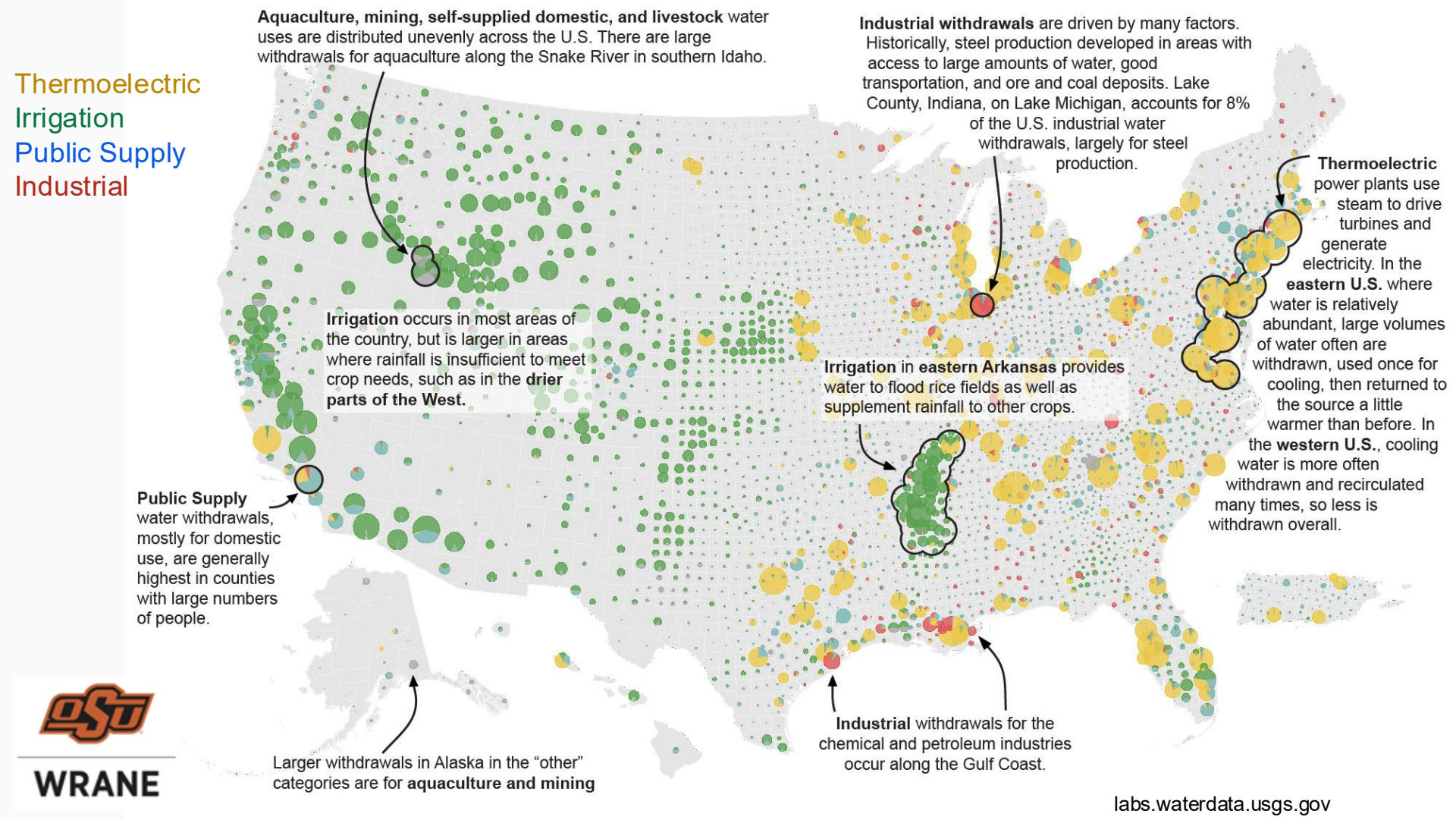
Thermoelectric
Irrigation
Public Supply
Industrial
Aquaculture, mining, self-supplied domestic, and livestock water uses are distributed unevenly across the U.S. There are large withdrawals for aquaculture along the Snake River in southern Idaho.
Industrial withdrawals are driven by many factors. Historically, steel production developed in areas with access to large amounts of water, good transportation, and ore and coal deposits. Lake County, Indiana, on Lake Michigan, accounts for 8% of the U.S. industrial water withdrawals, largely for steel production.
Thermoelectric power plants use steam to drive turbines and generate electricity. In the eastern U.S. where water is relatively abundant, large volumes of water often are withdrawn, used once for cooling, then returned to the source a little warmer than before. In the western U.S., cooling water is more often withdrawn and recirculated many times, so less is withdrawn overall.
Irrigation occurs in most areas of the country, but is larger in areas where rainfall is insufficient to meet crop needs, such as in the drier parts of the West.
Irrigation in eastern Arkansas provides water to flood rice fields as well as supplement rainfall to other crops.
Public Supply water withdrawals, mostly for domestic use, are generally highest in counties with large numbers of people.
Industrial withdrawals for the chemical and petroleum industries occur along the Gulf Coast.
Larger withdrawals in Alaska in the "other" categories are for aquaculture and mining
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labs.waterdata.usgs.gov

Too much vs. too little

Water is critical to society, so there are ramifications if there is too little water

- Drought
- Health issues
- Vegetation changes
- Subsidence

There are also problems if there is too much water

- Flooding
- Mass wasting
- Pollution/contamination

[The History of Oklahoma's Droughts](): Oklahoma State Water Center

Land Subsidence near El Nido, CA (USGS)

Flooding in Miami, OK 2007 (Stephen Holman/Tulsa World)

[Oklahoma Flood: Control for Land, Lives and the Economy](): USDA NRCS Oklahoma

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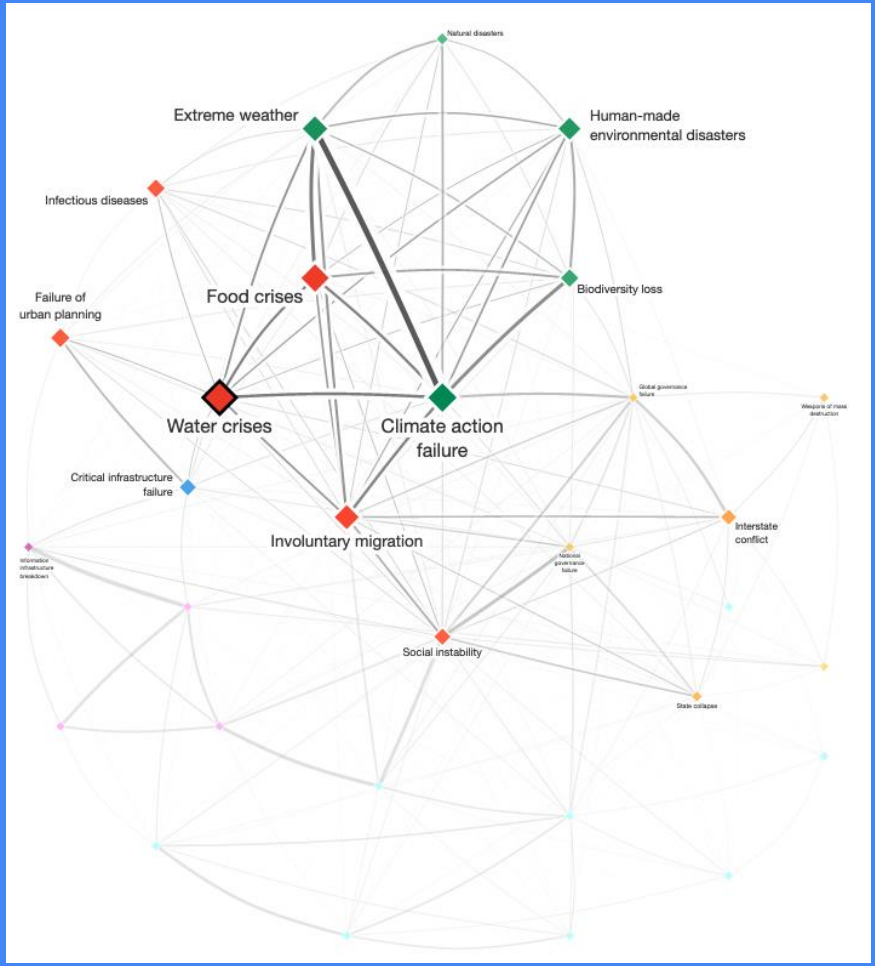
Water crises are linked to societal, environmental, geopolitical, and economic risks

-World Economic Forum, 2020 Global Risks Report



reports.weforum.org/global-risks-report-2020

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SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

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Water is critical for the future-

Knowledge of the geoscience of water is key to making important decisions.

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Acknowledgements

Contact us:

WRANEgeo@okstate.edu

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Cas.okstate.edu/wrane/index.html

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Additional Information:

- Water withdrawals by county and use visualization: USGS
- The Global Risks Interconnections Map 2020: World Economic Forum
- Water Facts: United Nations UN-Water
- The 17 Goals: United Nations Sustainable Development