



# Understanding how food, energy, and water decisions affect the thriving of local, regional, and global systems

## What Is The Issue?

Food, energy, and water (FEW) are often taught in isolation, but they are all components of interconnected systems at local, regional, and global levels. Further, exploration of FEW in STEM classrooms typically decouples human and natural systems, which ignores how economic, social, environmental and ethical decision-making are entangled. Engaging students in problem scoping practices like causal-loop modeling helps them consider the systemic interrelations of FEW, see these interrelations as part of larger socioecological and sociotechnical systems, and imagine and design for just futures centered on a flourishing living world.

## WHY IT MATTERS TO YOU

- **Teachers** should learn about the FEW systems where they teach and how students and families interact with these systems. Support student learning with an interdisciplinary/integrated curriculum that has social and community relevance. Teach about FEW justice issues in other global contexts. Use teaching approaches that center social and ecological justice and support complex systems thinking.
- **School Leaders** should support social and ecological justice-focused teaching with community messaging that describes and affirms how this learning reflects widely shared values for student learning.

## Things To Consider

- Isolated decision-making around food, energy, and water (FEW) can have a reverberating impact on larger socioecological and sociotechnical systems, such as in [this Everglades case study](#).
- Human decisions made about FEW in one place are inextricably linked to and reverberate through seemingly far-off regional and global systems.
- Perspectives beyond those of Western science, including Indigenous worldviews, can help teachers and students recognize that humans are not separate from systems (such as the natural world), but are part of them. According to Indigenous scholars like [Stephany RunningHawk Johnson](#), such perspectives matter because “[w]hen we think about ourselves as connected to all other relations — human and more-than-human — we must make choices that are good for us all.... [This] creates better humans who take the land, water, air, and other living beings into consideration when making decisions both big and small.”
- Decontextualized learning about socioecological issues can promote feelings of hopelessness or anxiety. However, [systems thinking and modeling can serve as a medium for speculative storying and restorying possible future worlds that nurture positive affect and hope](#).

## Recommended Actions You Can Take

- Prepare learners to live and relate differently in the world by addressing complex, interconnected, and transdisciplinary problems such as human-caused changes to Food-Energy-Water (FEW) and larger Earth systems. This will require [multidisciplinary/interdisciplinary/transdisciplinary curricula](#). Work with students and community members to design this [curriculum](#) and [connect school learning to meaningful FEW issues, places and spaces](#).
- Use activities like [Community Science Data Talks](#) to orient learners to local social and environmental justice FEW issues and community action.
- Use [critical engineering](#) pedagogical approaches that center local [place-based and community-centered, participatory design principles](#). These instructional approaches would be grounded in a commitment to relational problem scoping and include causal loop modeling ([See pp. 25-36 in Design Pack Systems Thinking](#)) and other associated “[practices of a systems thinker](#).”
- Use strategies like [photovoice](#), [self-documentation](#), and [community asset mapping](#) to support students as they develop a critical awareness of local FEW issues and then tell and rewrite stories about their communities and desired possible futures. Ask youth questions like, “What is the new story we would like to tell?” “Who is impacted in this new story?” and “How does this new story promote equity and justice?”

## REFLECTION QUESTIONS

- Consider the most pressing local, regional, or global FEW challenges for those in your students’ communities. What human actions and decisions contributed to these challenges for both humans and [more-than-humans](#)?
- How can students interrogate historic and ongoing decision-making connected to FEW? [Who had/has the power to make decisions that most contributed to these challenges?](#) Who—including more-than-humans—has been most impacted by these decisions?
- How can students imagine and design for a just and thriving social and ecological future for humans and more-than-humans, especially in relation to FEW issues or challenges?

## Attending to Equity

- [Explicitly recognizing and drawing on relational perspectives inherent in Indigenous worldviews](#) not only orients learners to the interconnected nature of FEW decision-making, it also [expands what counts as science in your classroom](#).
- The FEW-nexus is part of larger socioecological and sociotechnical systems. Orienting to questions of [equity, sovereignty, and racial justice](#) around FEW decision-making can draw out and elevate youth commitments to place-based plural thriving.

### ALSO SEE STEM TEACHING TOOLS:

- #57 [Place-Based Science Ed](#)
- #61 [Ecological Caring in Sci Ed](#)
- #87 [Environmental Justice](#)

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