

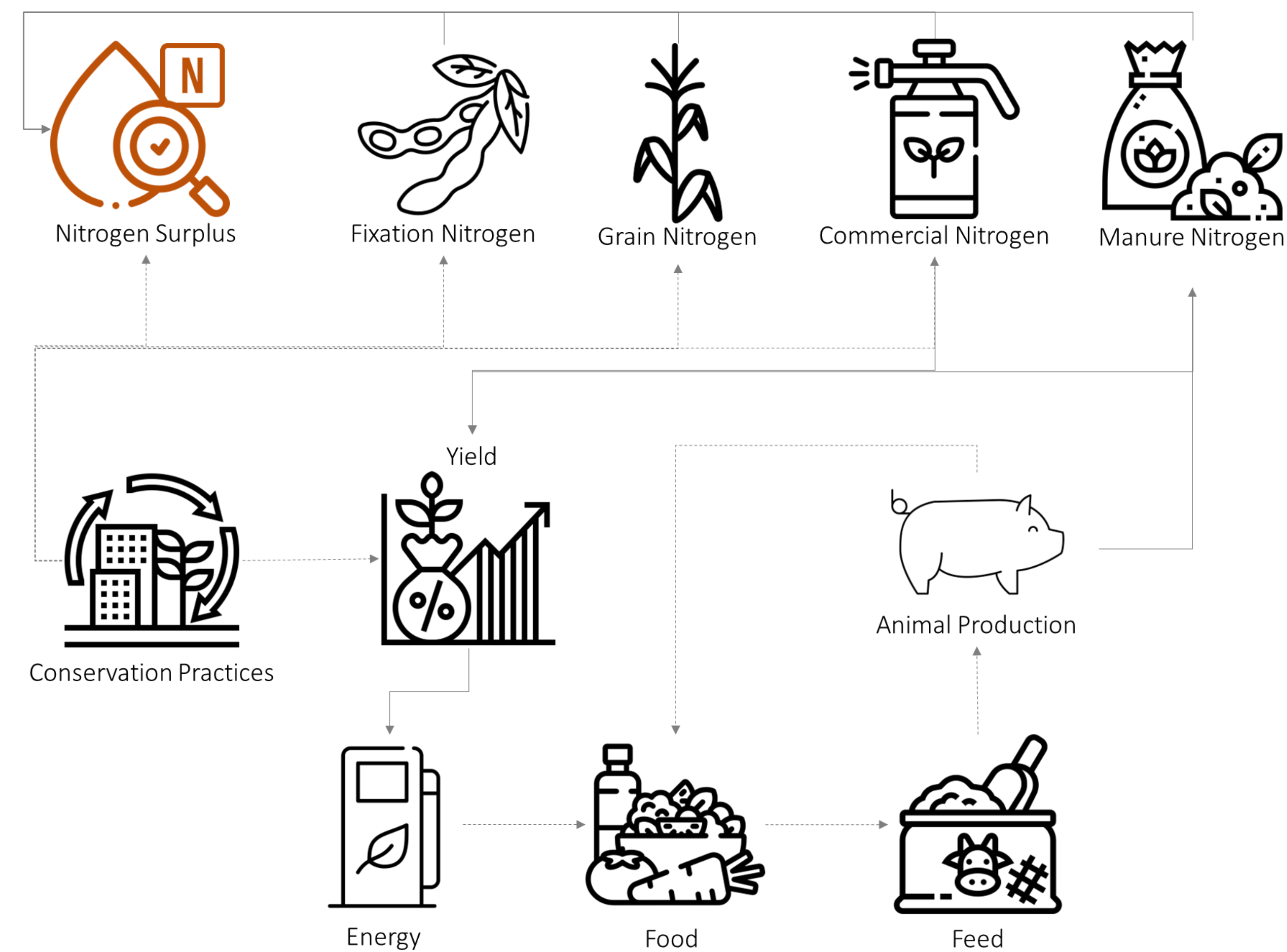
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# Understanding Nitrogen Load and IFEWs (Iowa Food-Energy-Water nexus) Demands

## THE PROBLEM

Hypoxic Zones are regions with a reduced level of oxygen in the water. Excess nutrients in water draining from agricultural land can be one of the stimulators of an overgrowth of algae, which then sinks and decomposes in the water, consuming oxygen and exhausting the supply available to healthy marine life. Because of Iowa's agricultural importance and contribution to long-term nitrate load in the Mississippi-Atchafalaya Basin (between 11 and 52% of nitrate load added), there is a need to describe and understand the relationship between Iowa's nutrient pollution and agricultural production. Nutrient pollution can be quantified by hydrology and water quality models already available. However, Iowa's food, energy, and water subsystems (IFEWs) are highly interconnected and no available models encompass all of the subsystems and their interactions. We propose a simple but multi-faceted FEW (Food, Energy, and Water nexus) model applied to the state of Iowa along with a visualization tool that highlights the spatial and temporal variability of and interaction between the subsystems.

## PARAMETERS AND RELATIONSHIPS



## GOALS

To discuss the IFEWs with stakeholders as researchers, farmers, policy-maker to define most meaningful parameters and demands.

To represent the findings of parameters and relationships and enable further discussion.

## IFEWs Dashboard

