Oklahoma Comprehensive Water Plan & Water's Role in Agriculture

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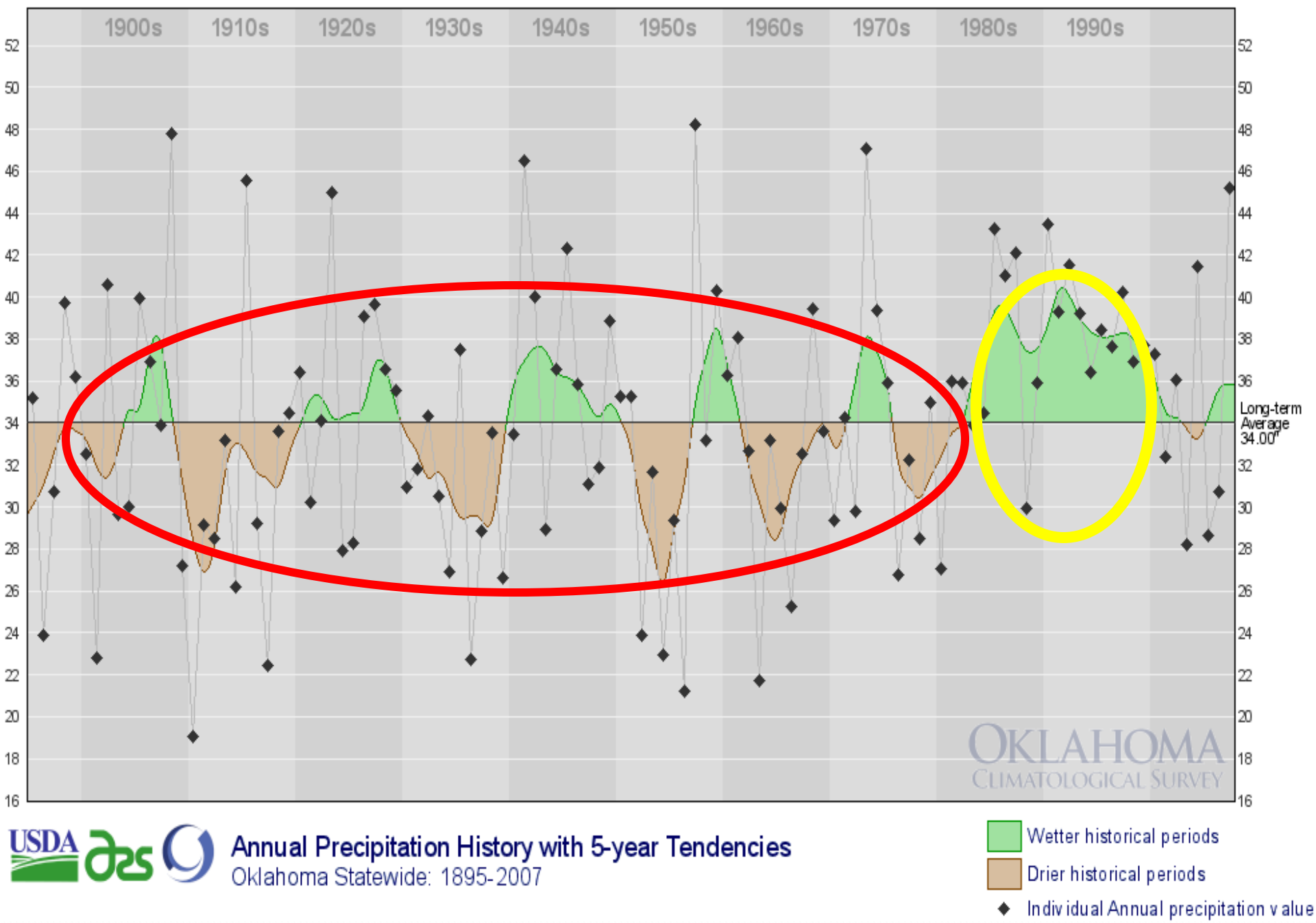
AGRICULTURE'S ROLE IN THE COMPREHENSIVE STATE WATER PLAN

- Sustainable agricultural industry essential to Oklahoma
- Water access essential to the success of agriculture and to the future of the state's economy
- The current state of knowledge limits scientific ability to evaluate future access to water and water supply



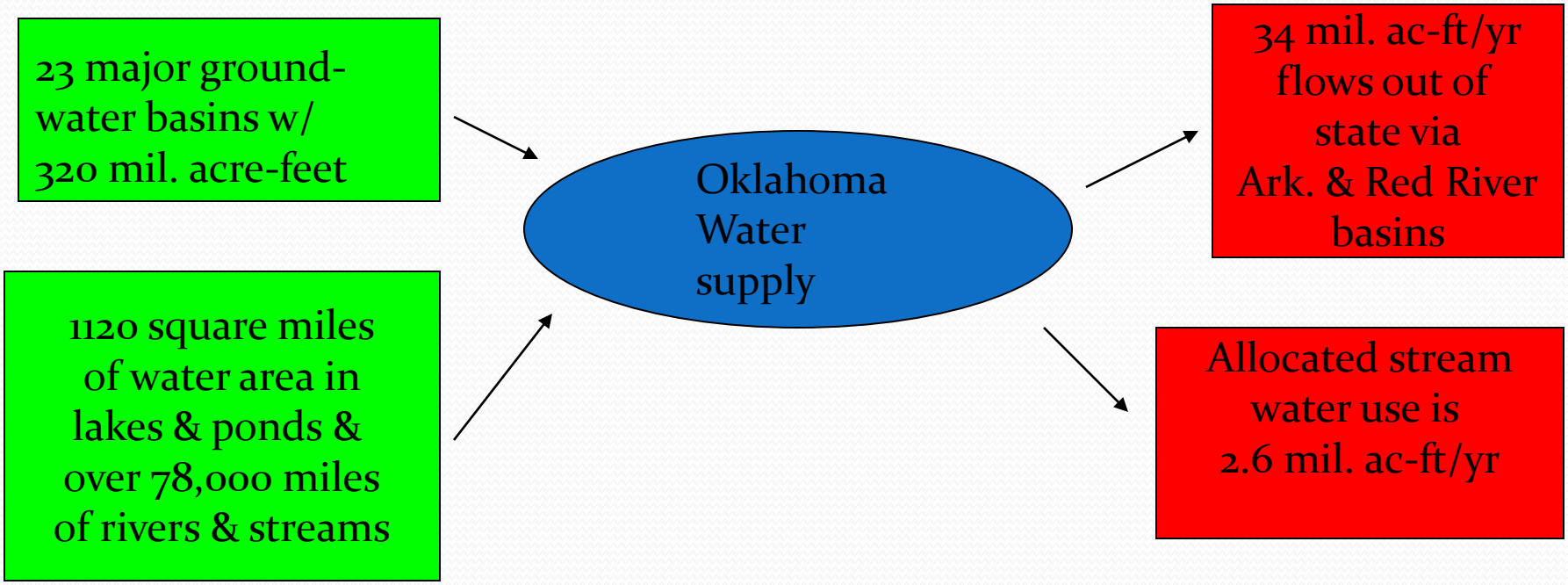
http://climate.mesonet.org/climate_trends.html

Water's Role in Agriculture

- Water accounts for 100% of the agricultural economy
- Direct impact for Oklahoma agriculture sector in 2008, including production and processing-- $20.3 billion
  - Total impact of agriculture sector on Oklahoma economy was estimated at over $28 billion
- Average streamflow and groundwater recharge would likely be lower were it not for the existence of crop production agriculture and the stewardship of agricultural land managers
- Farms cover 35 of Oklahoma's 44 million acres, they are the first recipients, first users, and first managers of around 75-80% of Oklahoma's precipitation

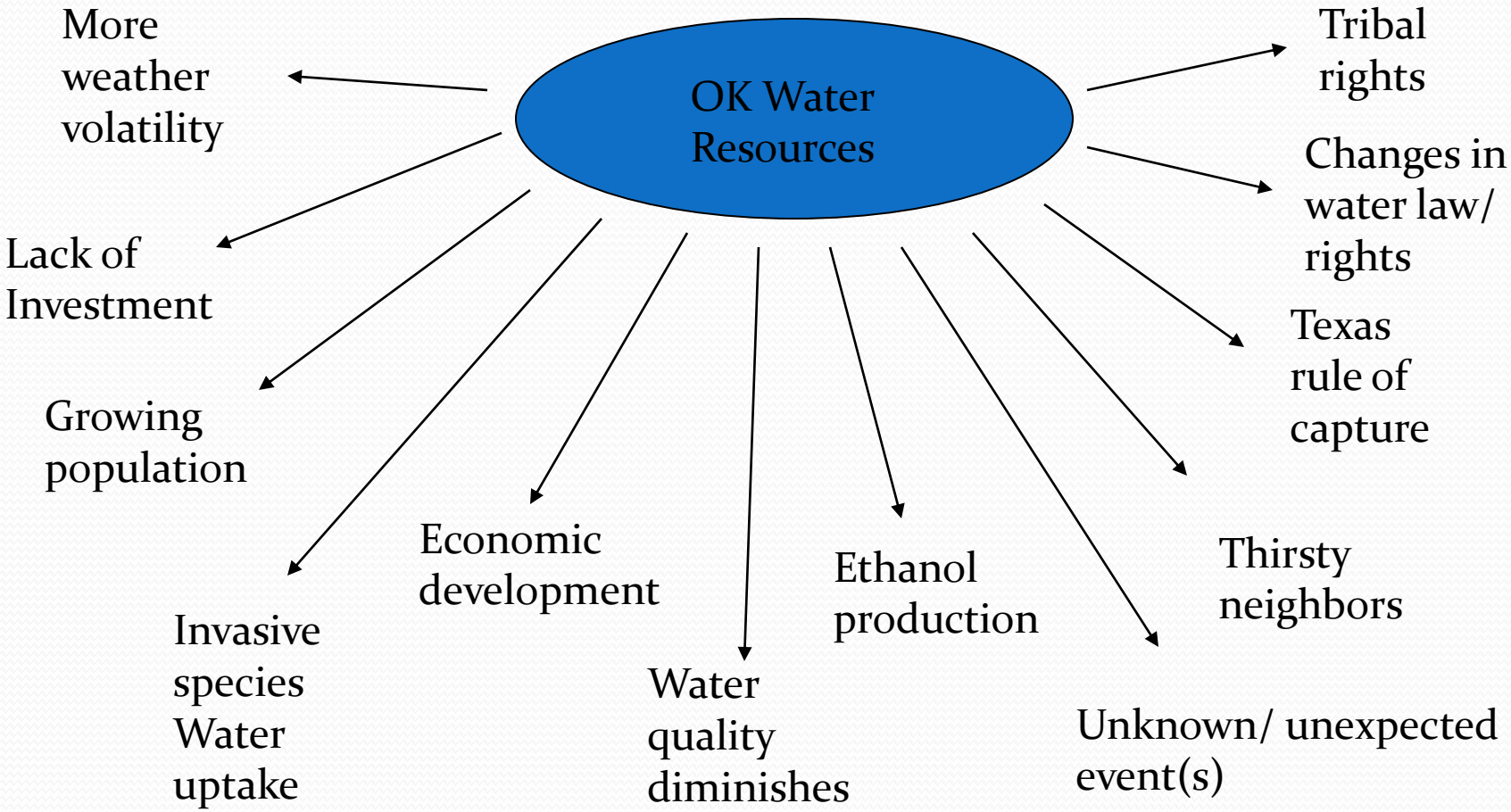
Water Supply Issues in OK

Plenty of water…



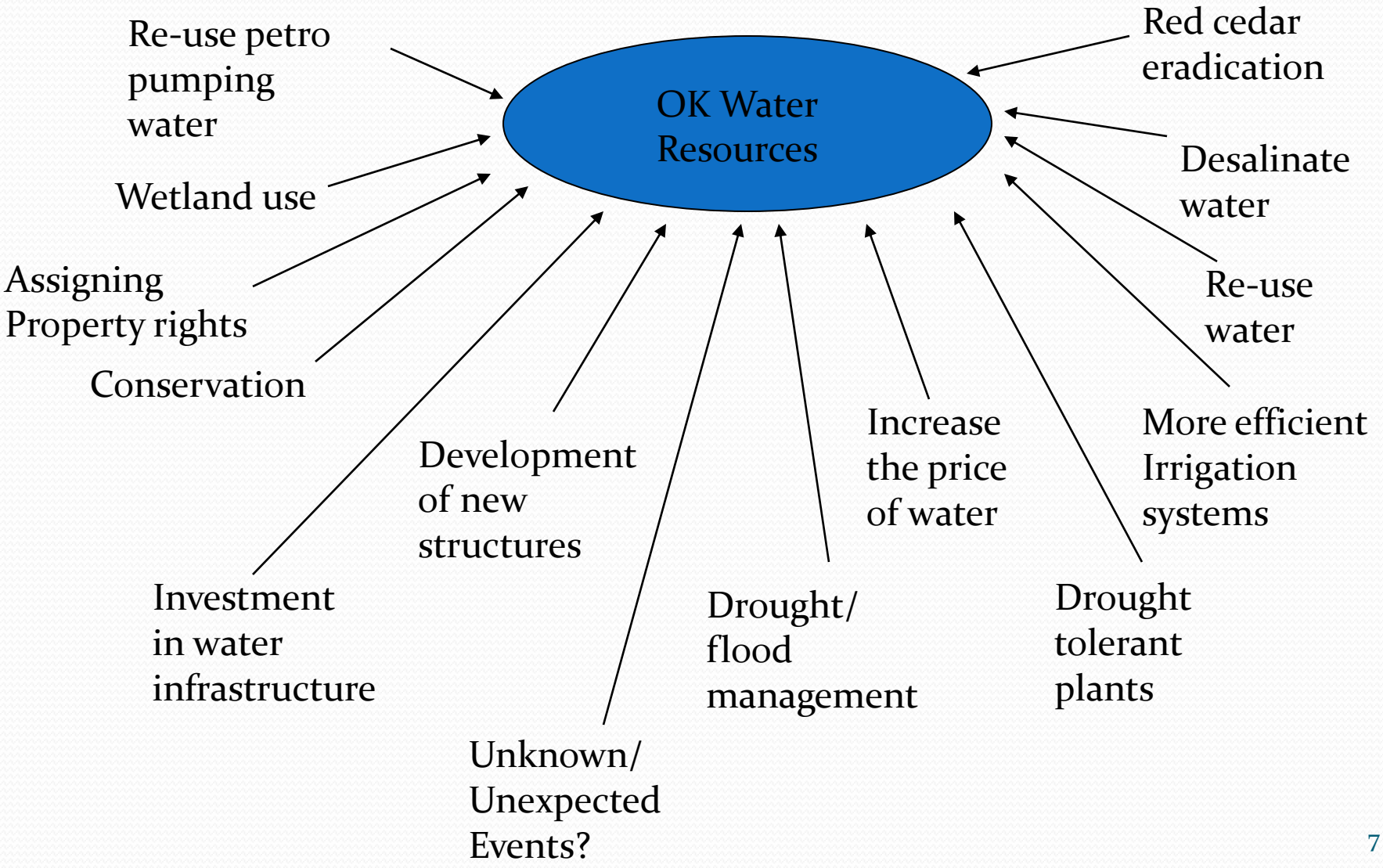
Problem is Allocation– getting it *where*, *when*, *how much* and at a *price* we want

Oklahoma water resources under pressure



20 years ago, how many of these were unexpected events?

Oklahoma water under pressure, but… changes in demand and supply



Research/Education Recommendations

- What is the annual water balance for watersheds?
- What is the influence of farmland management practices on rainfall partitioning and water production?
- How are trends in land use and land cover impacting the hydrology of watersheds?
- How will climate change influence the water balance?
- How can Oklahoma's world leadership in remote sensing research & Mesonet capabilities be used to develop decision support systems to forecast changes to water use & availability due to climate variability, conservation practices, public policy, & land-use change?
- How can Coop Extension programs be developed & delivered to assist ranchers, farmers, other landowners, & rural communities to adopt management to increase resilience & reduce vulnerability to climate variability?

Recommendations (cont.)

- What horticultural practices could be phased in over time to lower water consumption (Xeriscape, low-input irrigation, rain barrels, biretention ponds, rain gardens, etc.)?
- How could gray water be better recycled?
- What water conservation/reuse-recycling options best fit Oklahoma & what are the most expedient and efficient options for managing water use conflicts?
- To what extent will exurban development influence ground water use, especially riparian water use through demand created by large, irrigated gardens & other domestic-use demands for water as allowed in the current statute?
- How will livestock water requirements change with changing production/market environments?


Fish pee in there you know.


Questions:
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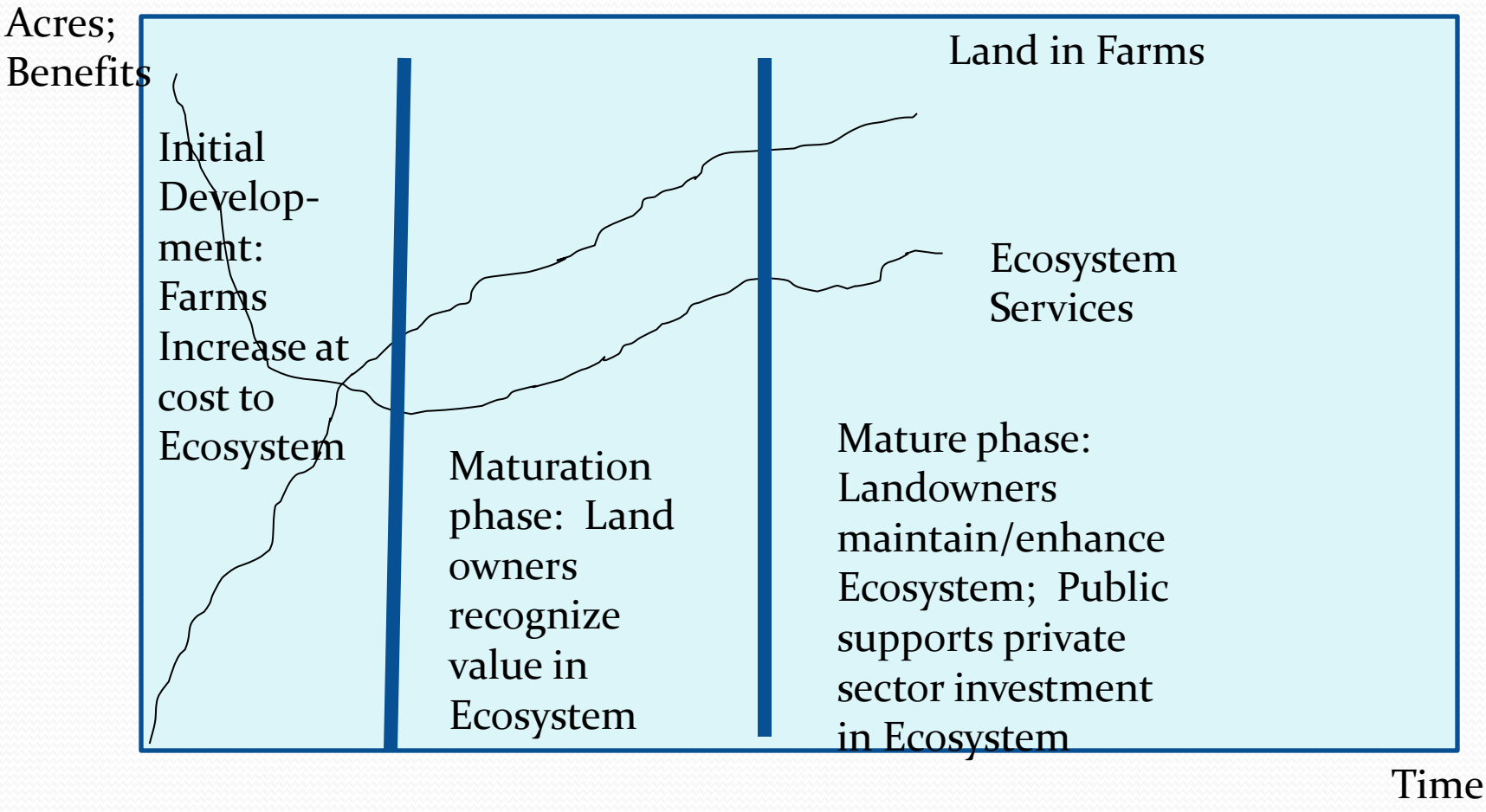
Hypothetical Correlation between Land in Farms and Level of Ecosystem Services

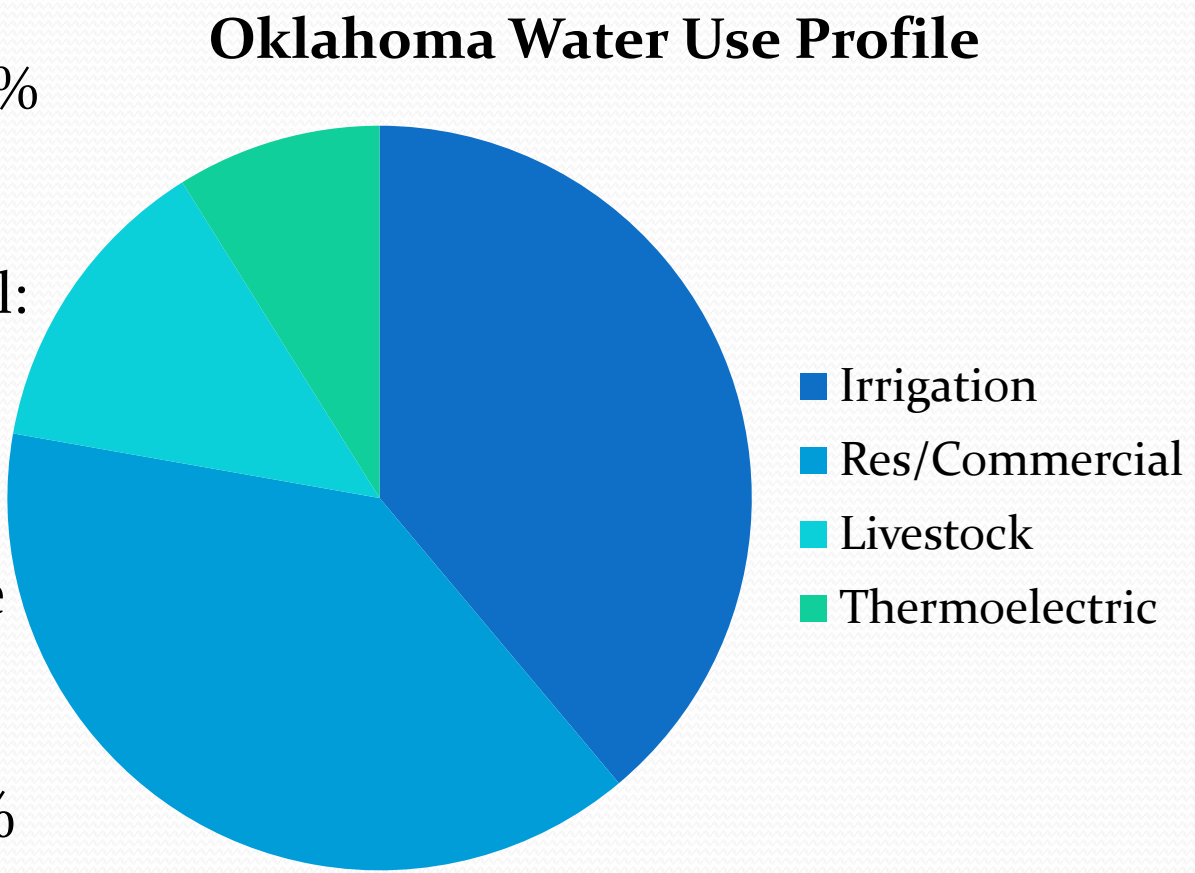


Oklahoma Water profile

- Irrigation: 30-40%
  - Groundwater: 75-87% of irrigation water supply
- Residential/Commercial: 30-40%
- Livestock: 12%
- Thermoelectric: 8%

But, some "consumptive use" returned to watershed.

- Groundwater: 75-87% of irrigation water supply



Ecosystem Services

- Benefits that people and other living species gain from environmental assets and natural capital stocks
  - wildlife habitat
  - clean water and air
  - productive soil
  - stable plant and animal communities
  - Environmental assets that are the basis for outdoor recreation opportunities