# Exercise 4

# Systemic approach to mapping sustainability challenges

Laboratory on Human-Environment Relations in Urban Systems

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# Task 1 (10 mins)

- Describe 3-4 challenges that your cities face in meeting sustainability goals, related to their common characteristic

Nutrition

Access to drinking water

Fossil fuel consumption



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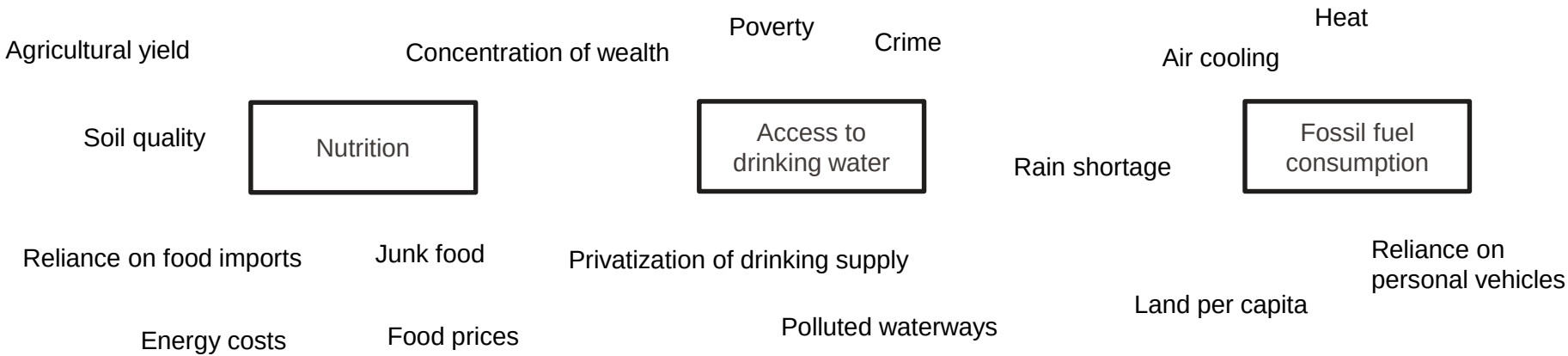
# Task 2 (10 mins)

- Describe 3-4 challenges that your cities face in meeting sustainability goals, related to their common characteristic
- What factors contribute to these challenges?



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# Task 3 (10 mins)

- Describe 3-4 challenges that your cities face in meeting sustainability goals, related to their common characteristic
- What factors contribute to these challenges?
- (How) are these factors linked to each other?

Inspiration

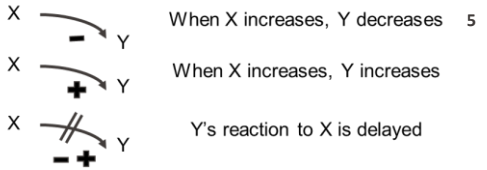
https://kumu.io/stw/world-problems

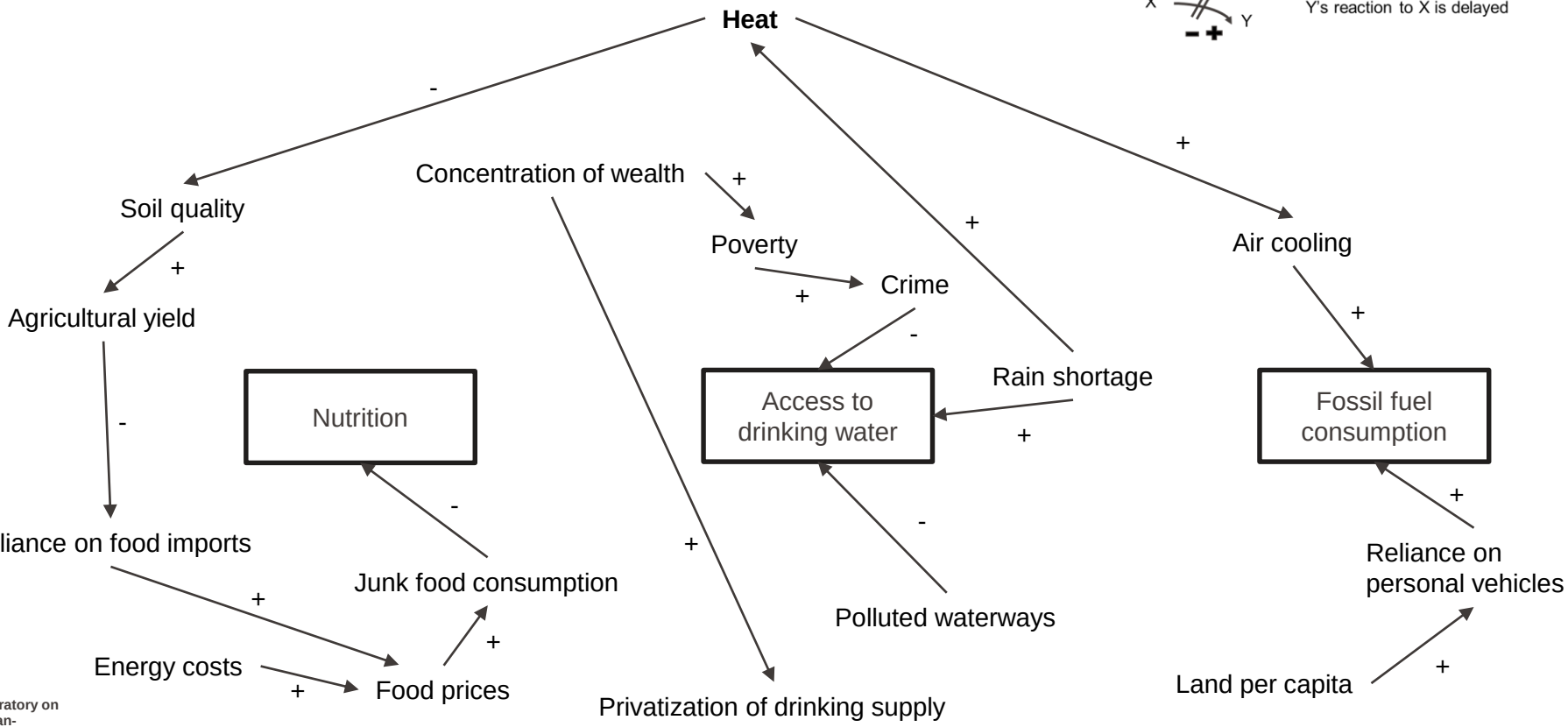
https://simulation.tudelft.nl/SD/CaseBookSD101ErikPruyt_2019a.pdf

https://untools.co/systems-thinking

# Example: Desert cities





# Guiding principles: Boundaries

- **Problem-focused:** Modelling a problem, not the entire system
- **Direct causal links:** Is it possible to to perceive, identify or assume direct causal relations?
- **Spatial scale:** Administrative boundaries of the city? Supply chain boundaries? Spatial boundaries?
- **Temporal horizon:** (for both for static and dynamic analyses) what time frames matter for your system's state?