

Applying ontologies to resilience and sustainability concepts in food systems

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Sustainability and resilience thinking in agriculture and food systems is a valuable way of conceptualizing current problems, opportunities, strategies, and solutions.

How to concretely apply these concepts at the local, regional, and global scales?



Complex problems

How to aid decision-makers with data capture, representation, visualization and sorting through complexity?

What is an ontology?

Conceptualizations of objects, concepts
and other entities based on the
relationships between them

(Genesereth & Nilsson, 1987)

Triples



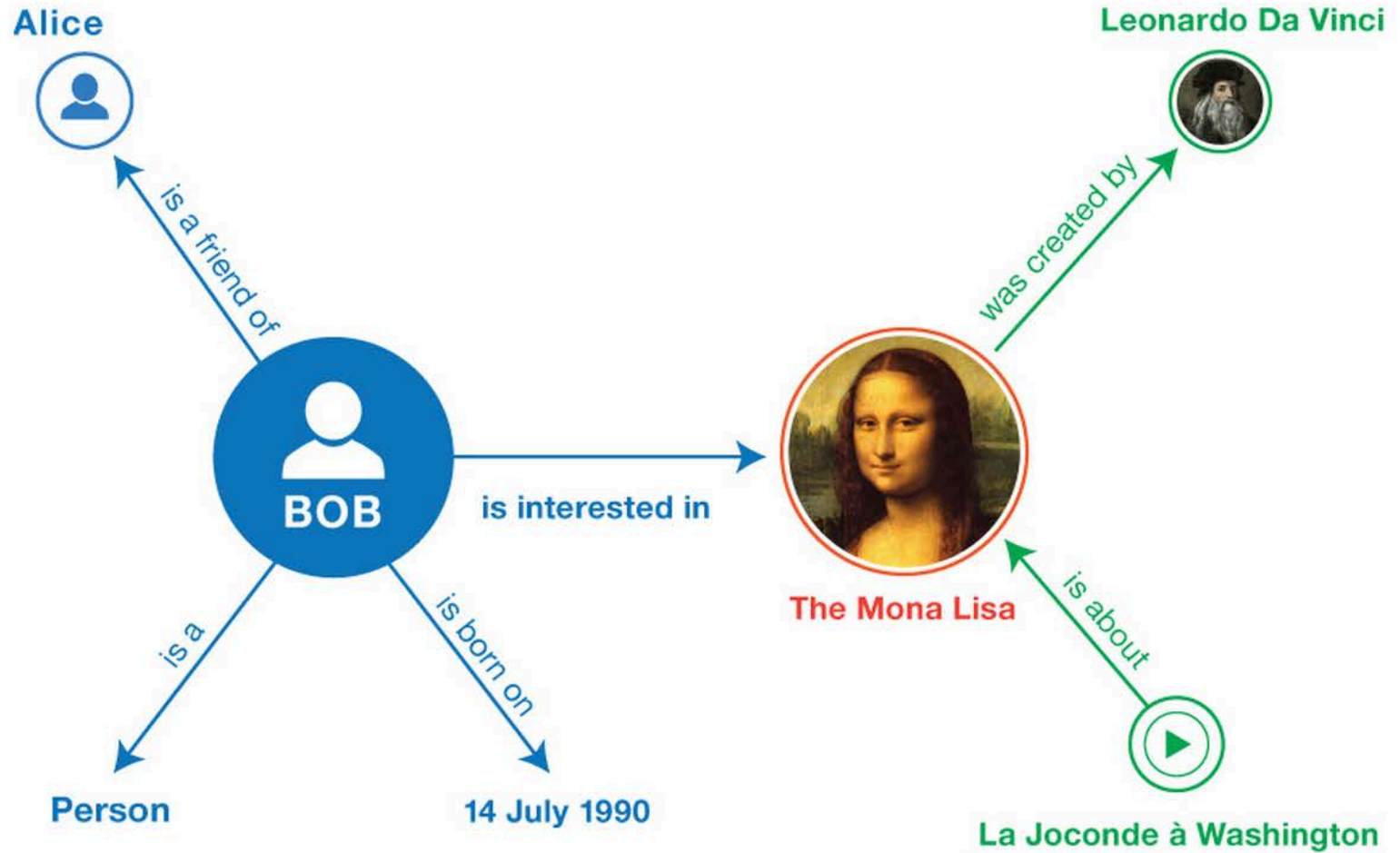


Fig. 1 Informal graph of the sample triples

Sustainability and Resilience



Sustainability

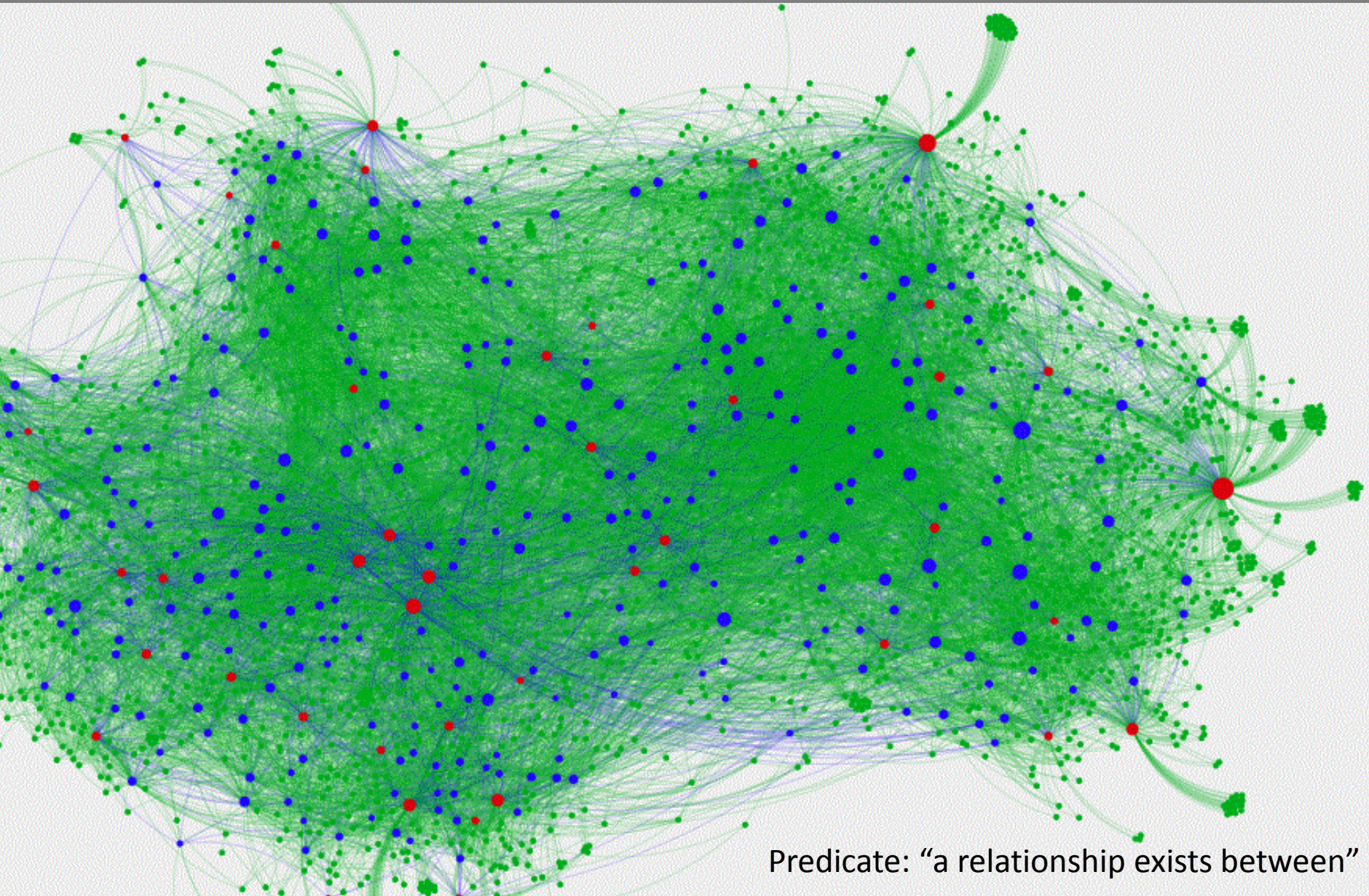
- Springer et al. 2015
- Comprehensive approach to sustainable sourcing
- Sustainability issues & indicators

Resilience

- Tendall et al. 2015
- Food system resilience approach
- Resilience attributes

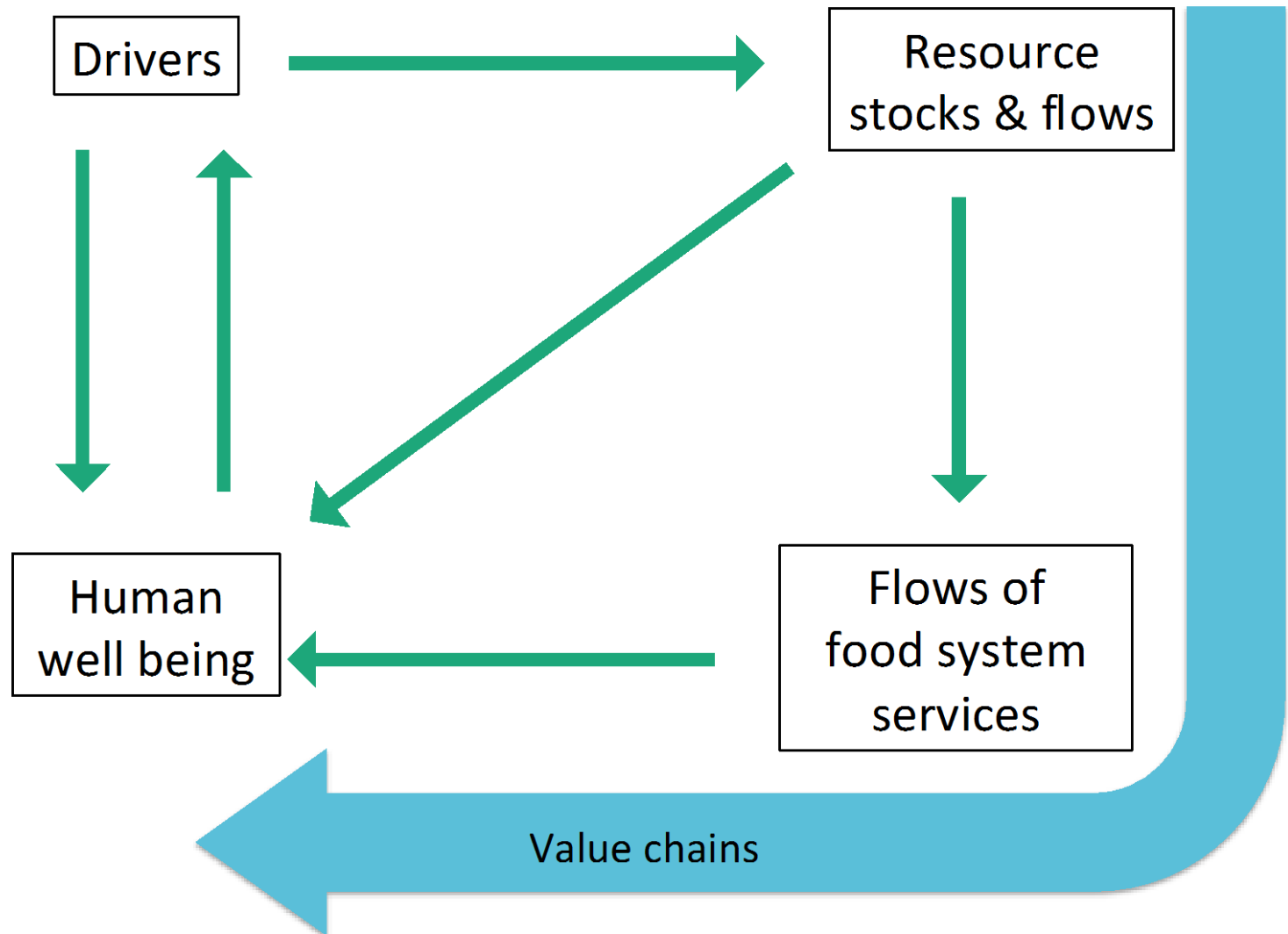
Both involve a multi-stakeholder negotiation-support process

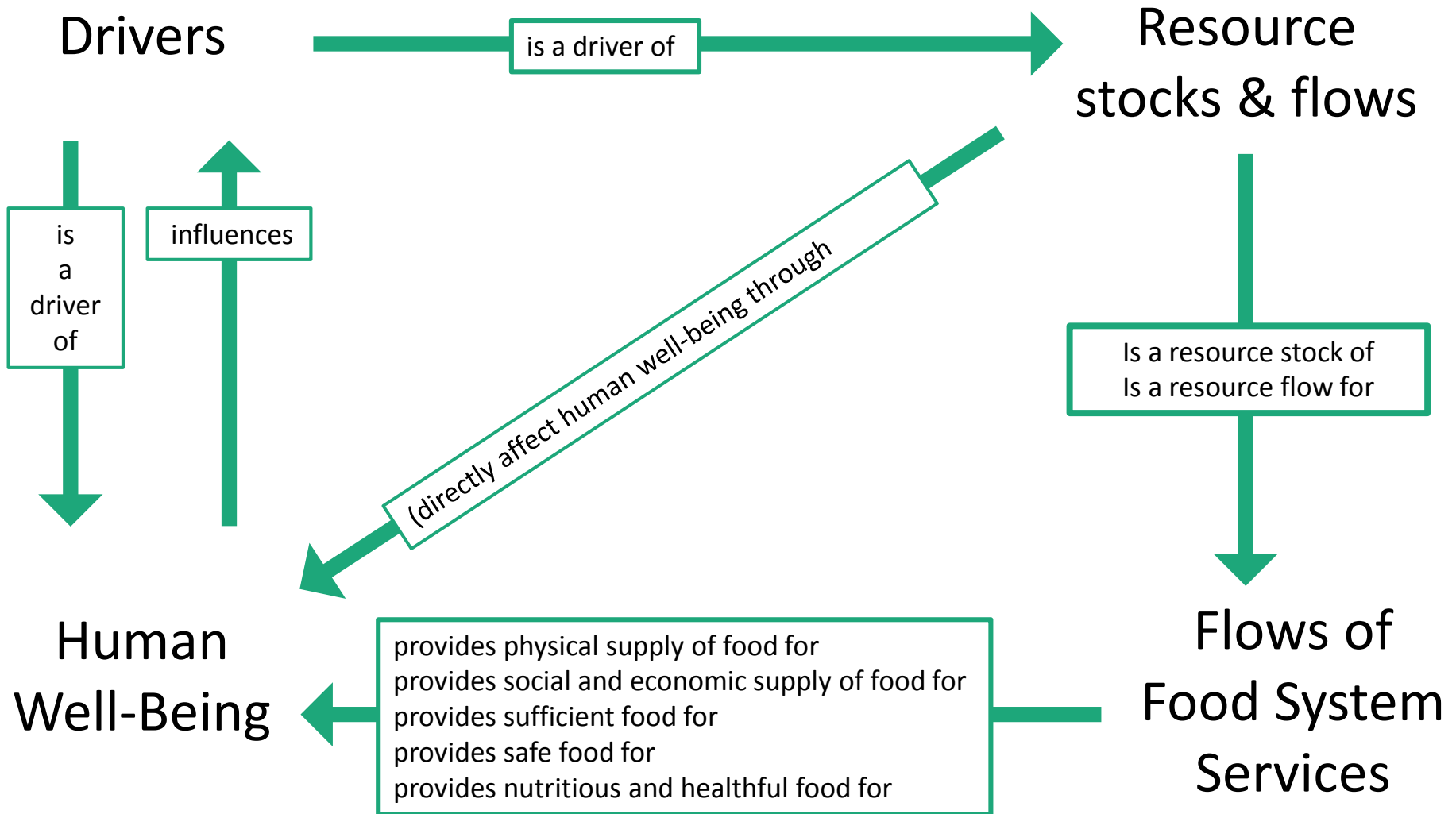
Sustainability issue to indicator linkages



Predicate: "a relationship exists between"

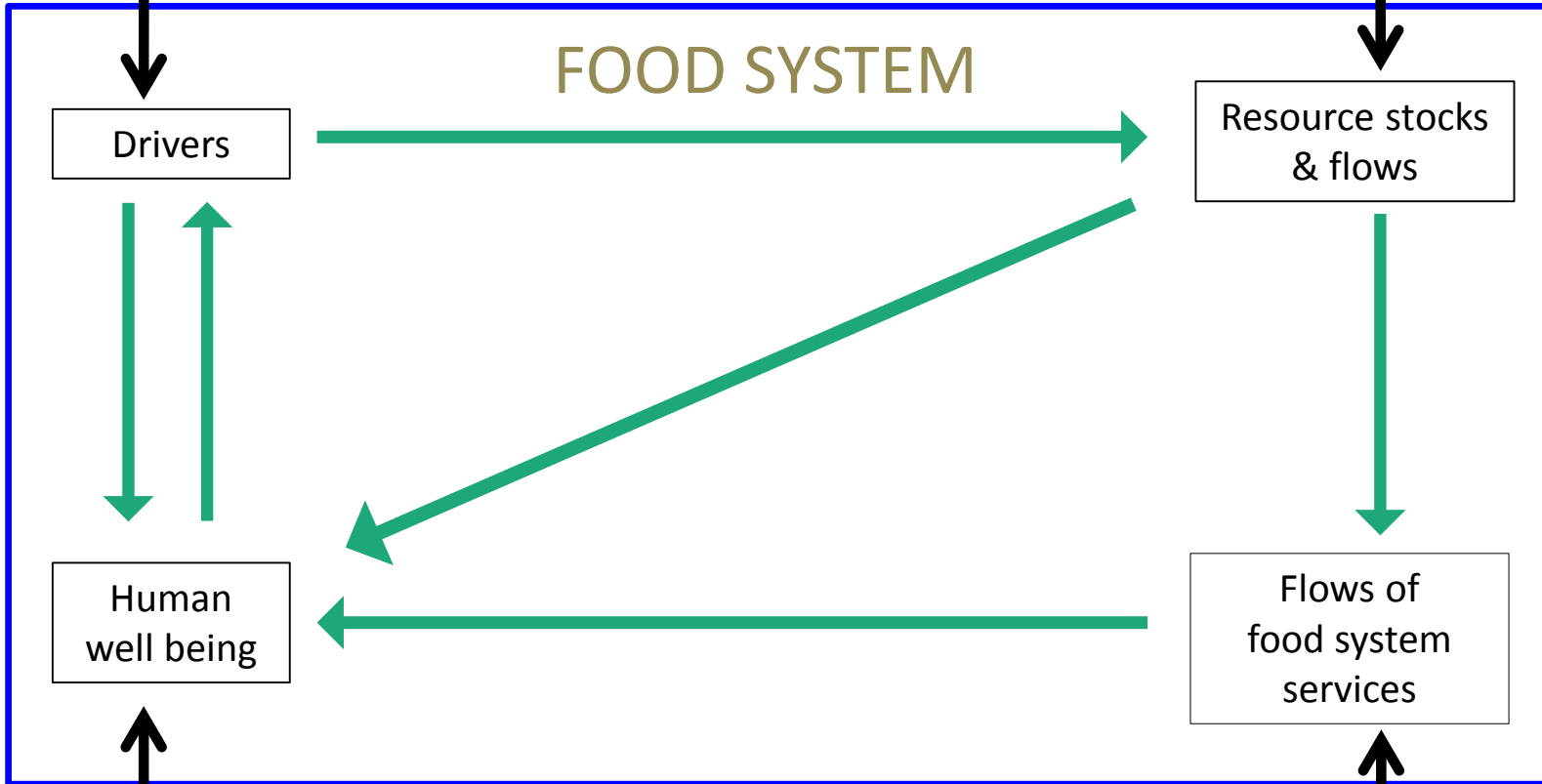
Framework





Climate systems
Political systems
Science & technology innovation systems

Energy system



Health and sanitation systems
Education systems
Social security systems
Safety nets

Transportation system

Resilience attributes

Absorptive capacity

Adaptive capacity

Buffering capacity

Coping capacity

Environmental capacity

Learning capacity

Mitigation capacity

Transformative capacity

Accountability

Adaptability

Agency

Awareness

Cohesion

Connectivity

Diversity

Flexibility

Inclusiveness

Innovation

Modularity

Nestedness

Readiness

Redundancy

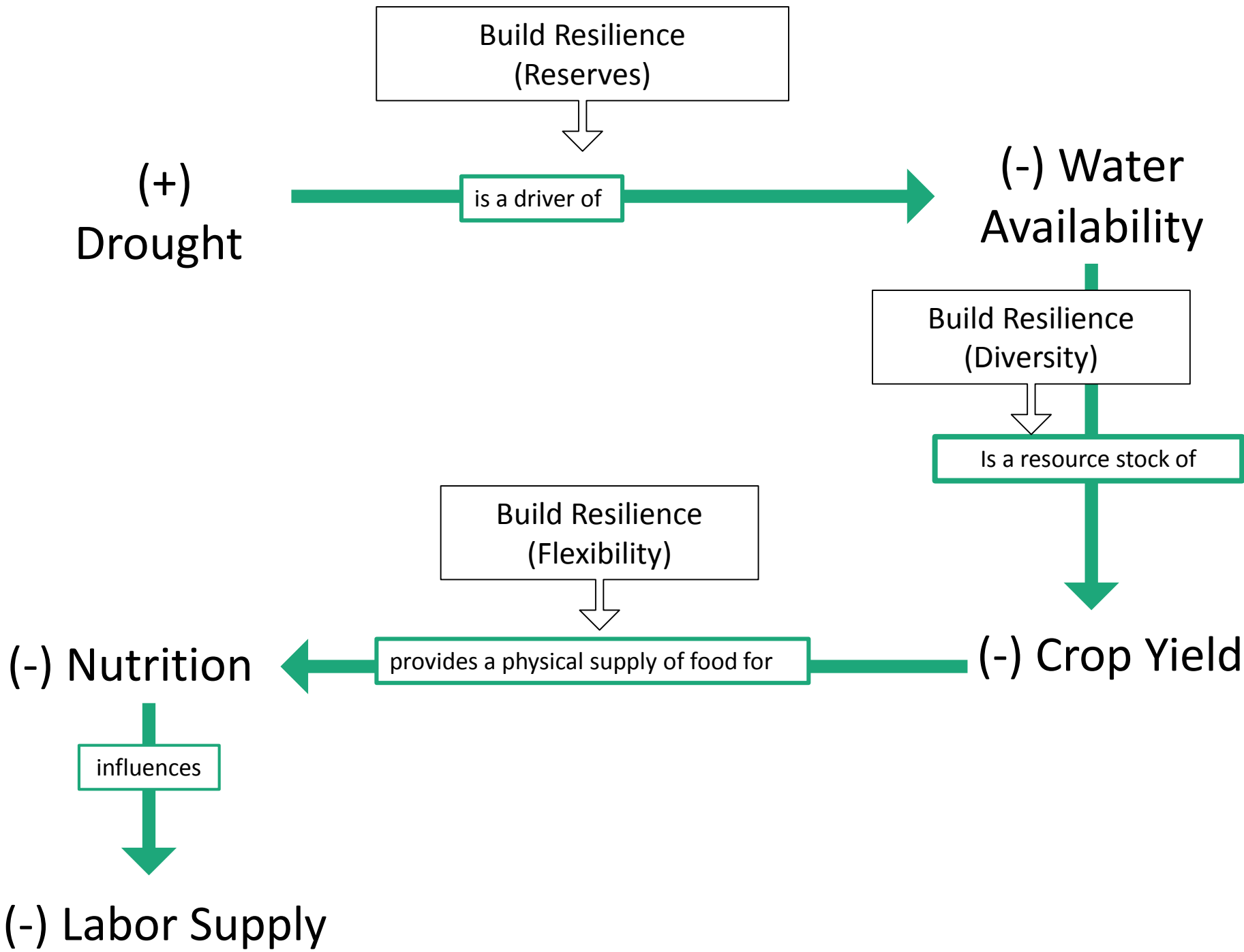
Reserves

Resourcefulness

Robustness

Self-organization

Transparency



Next steps

- Future use cases (SACOG)
- Cross checking conceptual ideas with on-the-ground research (tef in Ethiopia, cocoa in Ghana)
- Connecting relationships to indicators

Thank you

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