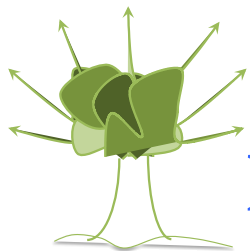


# Model complementarity for Integrated Spatial Planning (ISP)





Infrastructure is *the physical components of interrelated systems* providing commodities and services essential to *enable, sustain, or enhance societal living conditions* Fulmer, 2009.

## THE CHALLENGE

**How best to plan roads, railways, power, waste management, irrigation infrastructure in a context of climate change and equitable development?**





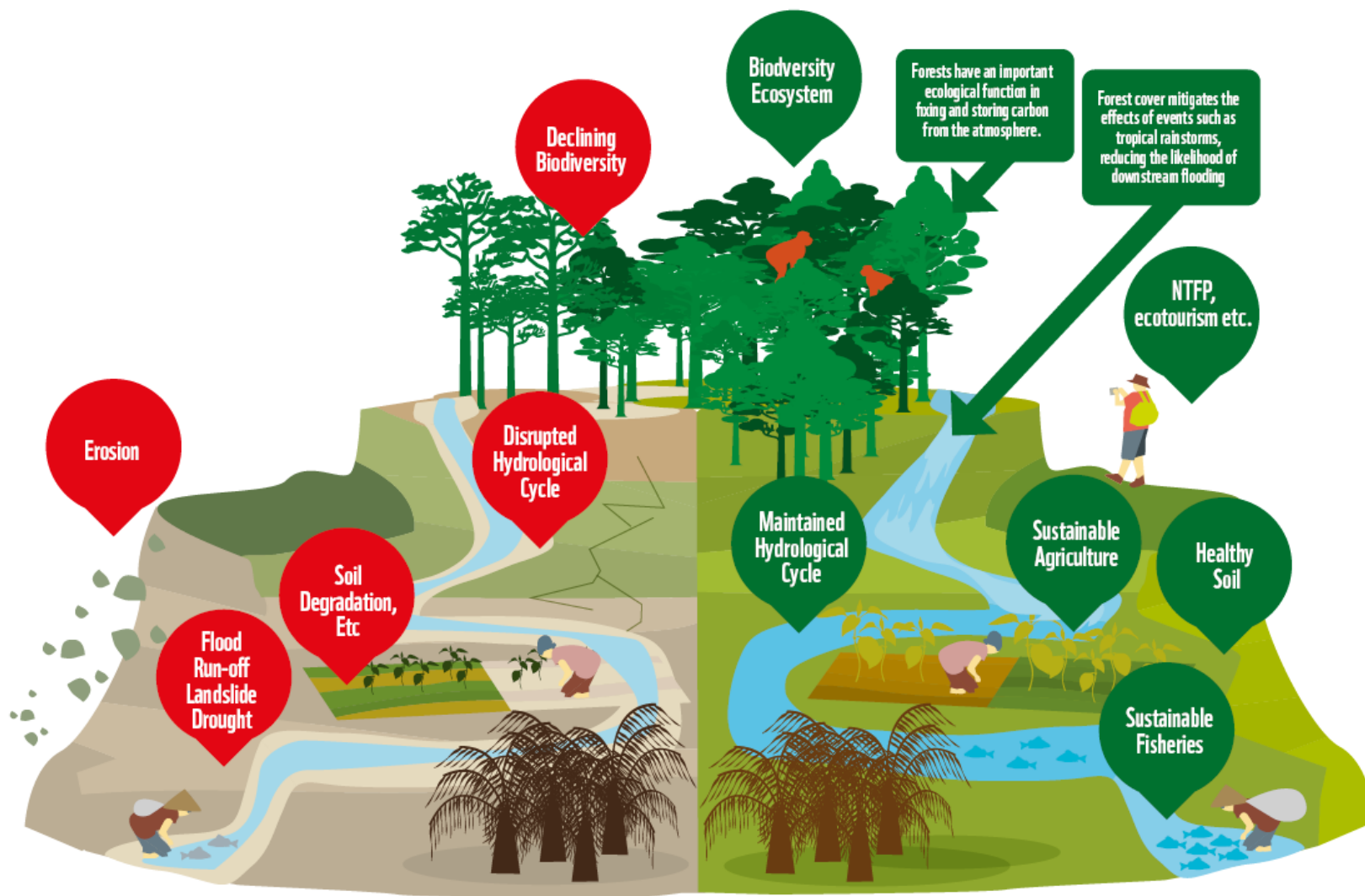




# THE GOAL: an Integrated Assessment

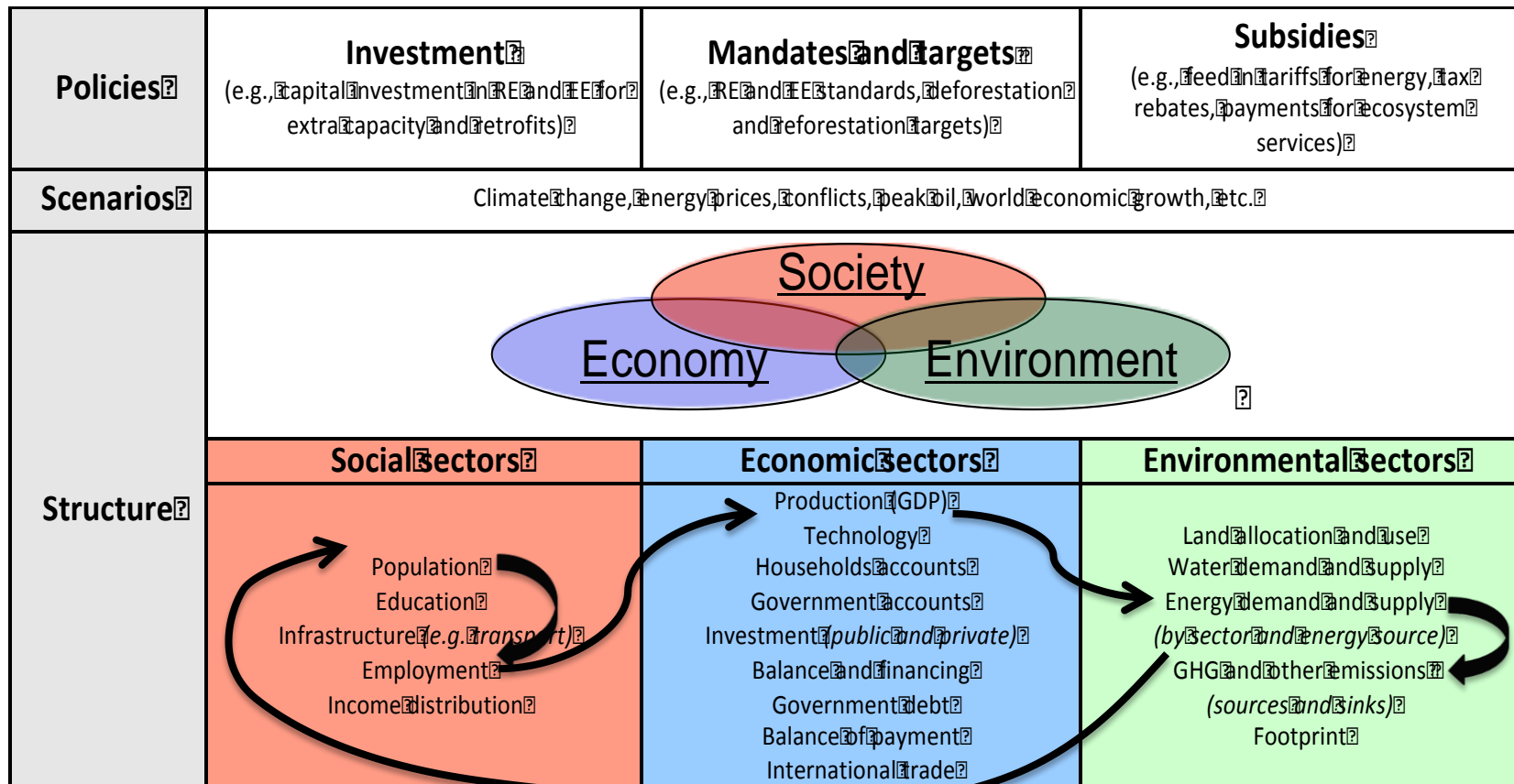
CLIMATE CHANGE IN AN ECONOMY THAT  
UNDervalUES NATURAL CAPITAL

CLIMATE CHANGE IN AN ECONOMY THAT FULLY  
VALUES NATURAL CAPITAL



# SCIENCE RESPONSE

**Holistic analysis** take into account the drivers of social development and economic performance to reach sustainability

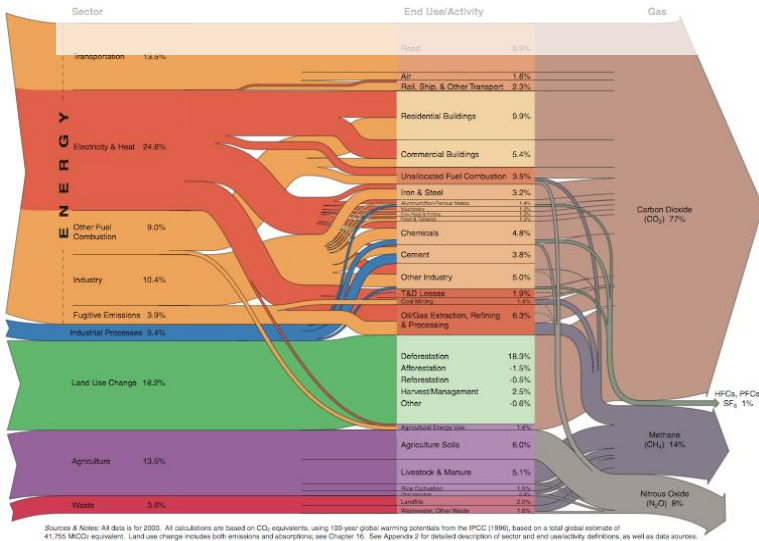


# TOOLS FOR ISP

Several **tools and methods** can be used to support the **assessment** of spatial developments:

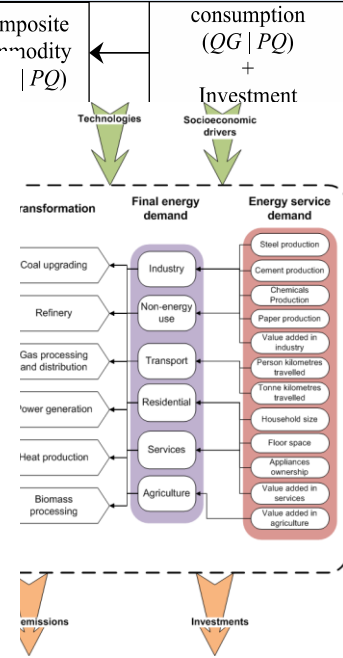
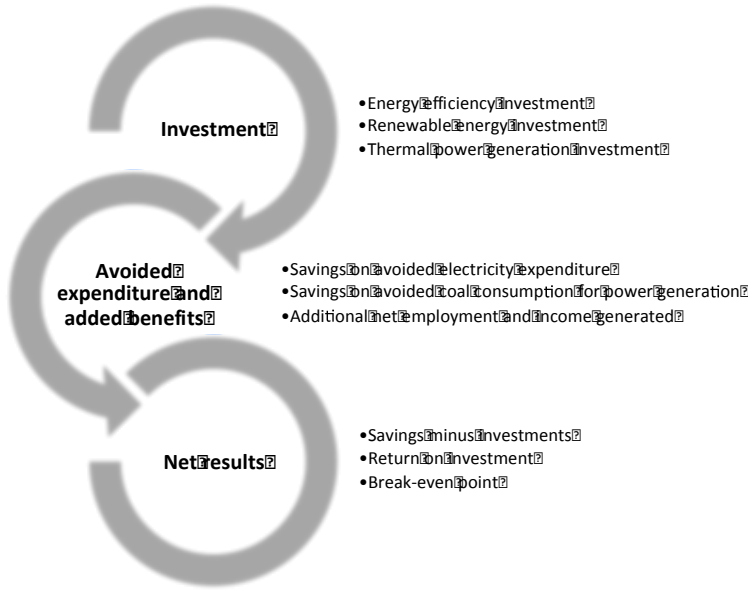
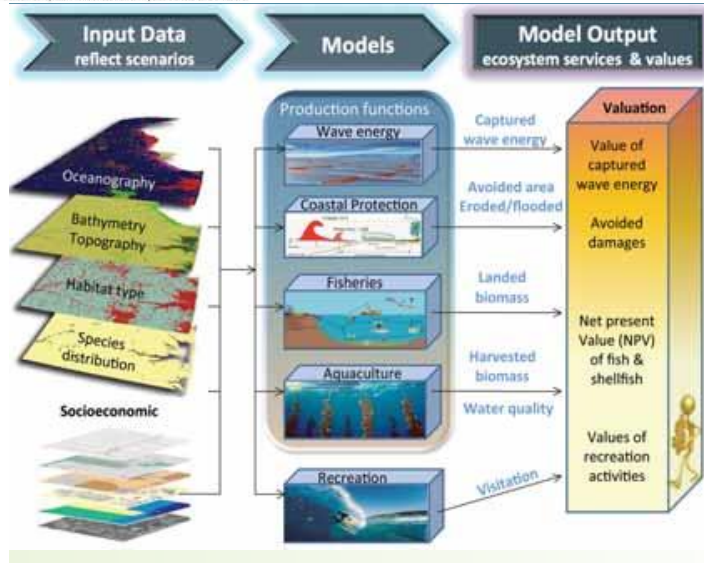
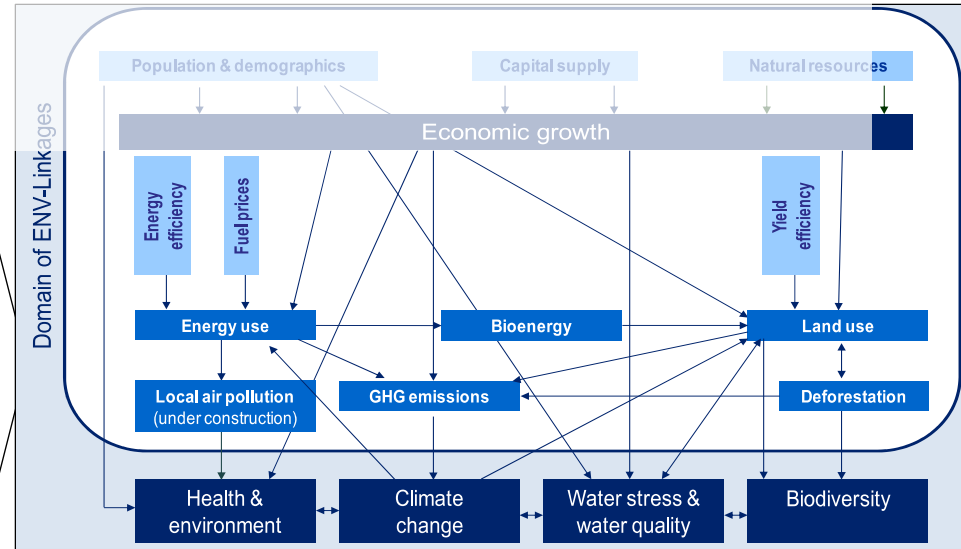
1. Indicators and Data Frameworks
2. Spatial Planning Tools
3. Environmental Accounting Tools
4. Natural Capital Valuation Tools
5. Investment/Policy Evaluation Tools
6. Scenario Creation Tools
7. Scenario Forecasting Tools

# MANY ISOLATED TOOLS



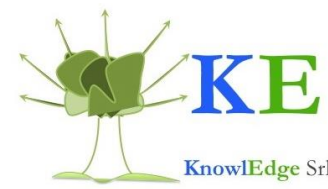
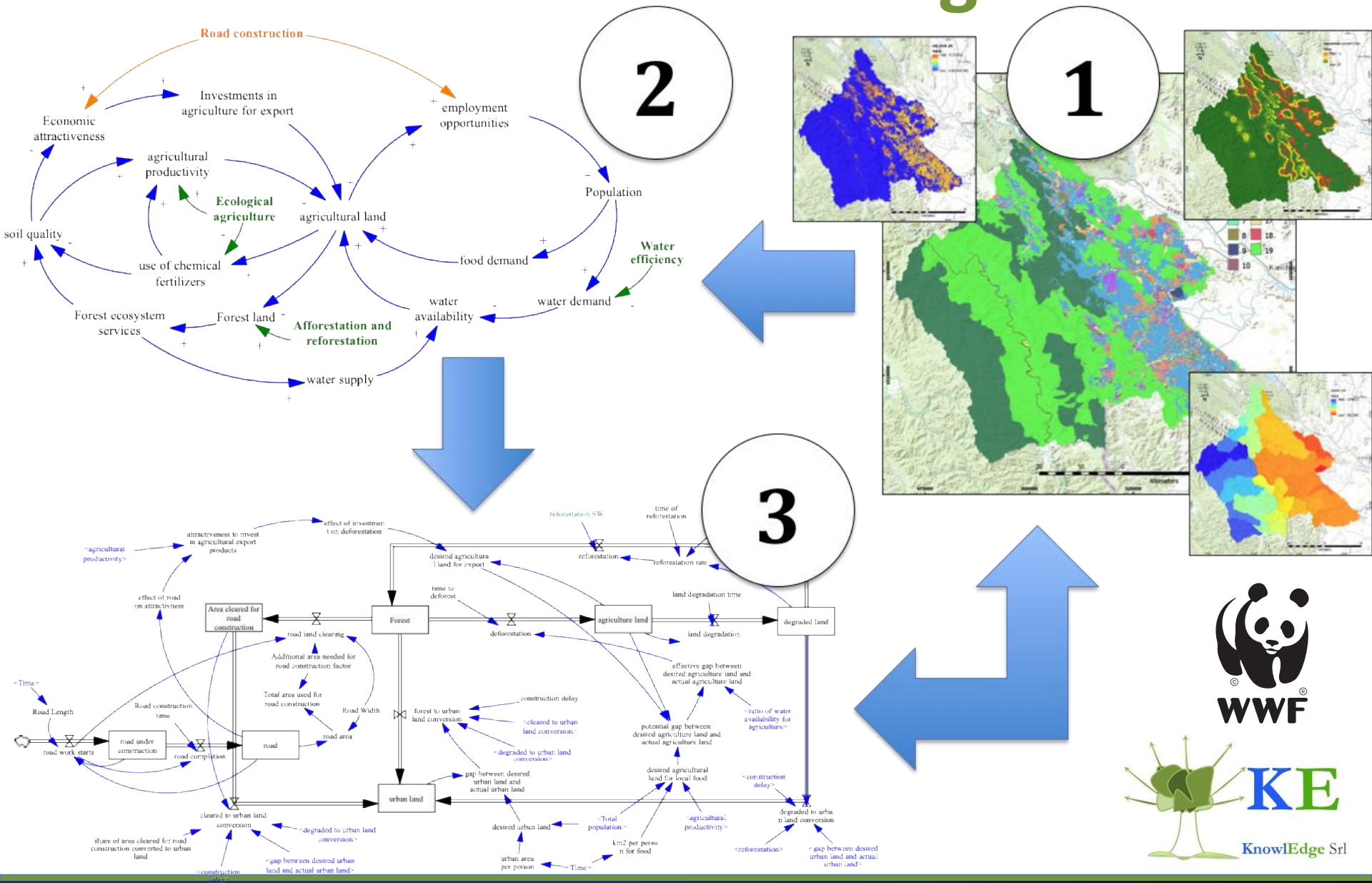
Commodity output from activity 1 (QXAC | PXAC)

Commodity output from activity n (QXAC | PXAC)

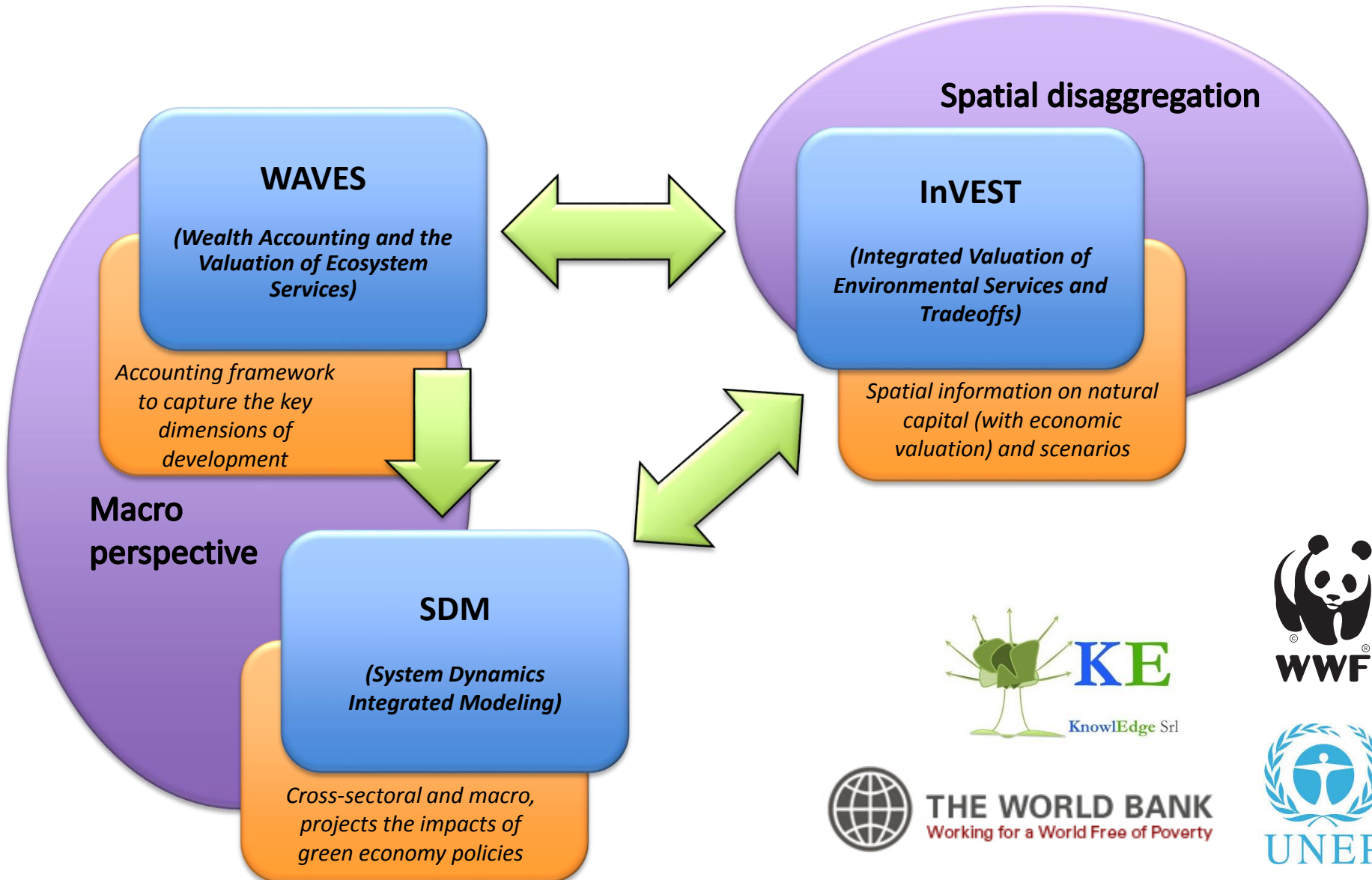




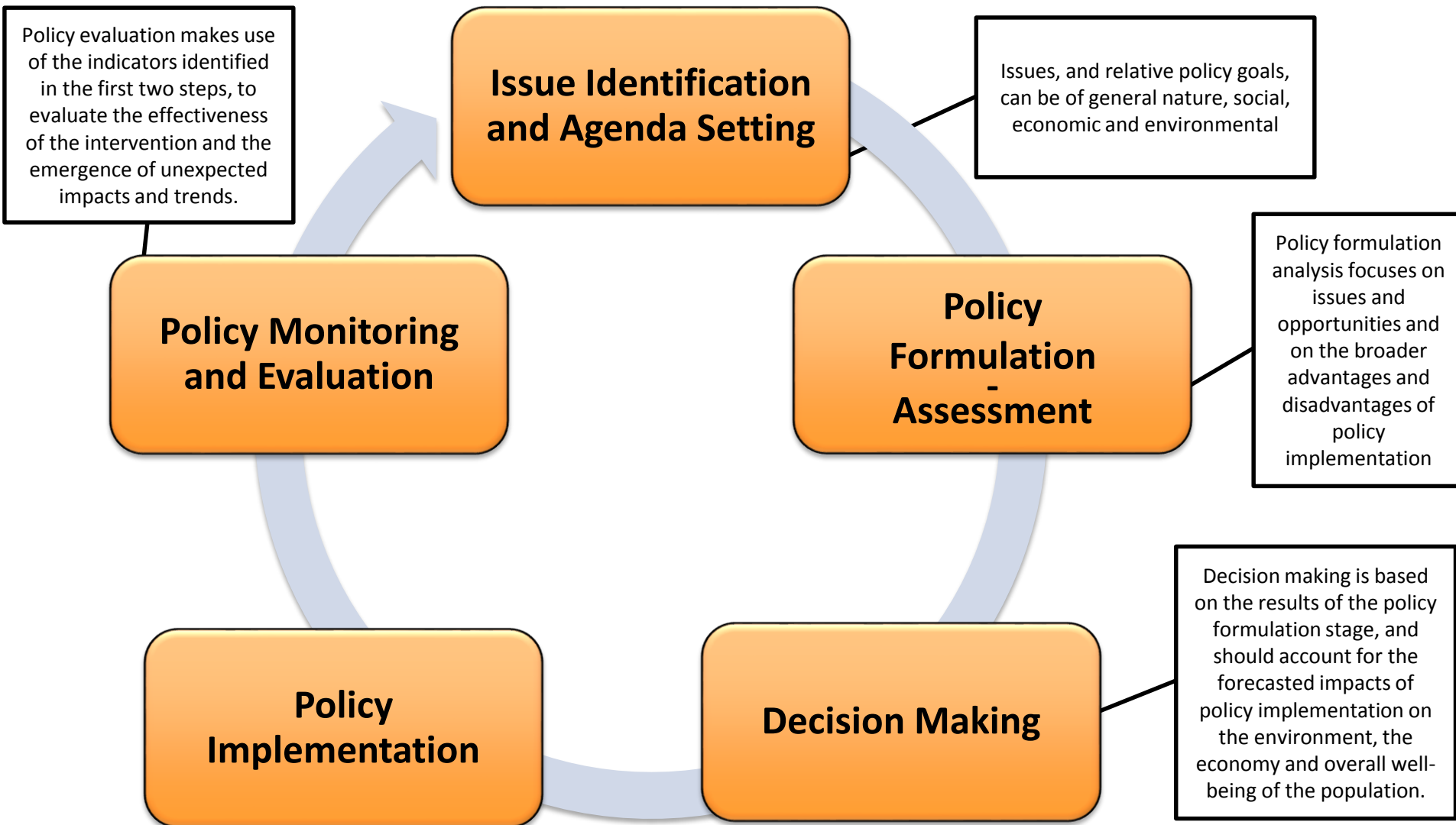
# THE SOLUTION: Tools Integration



# THE SOLUTION: Tools Integration



# ADVANTAGES: Policy Cycle



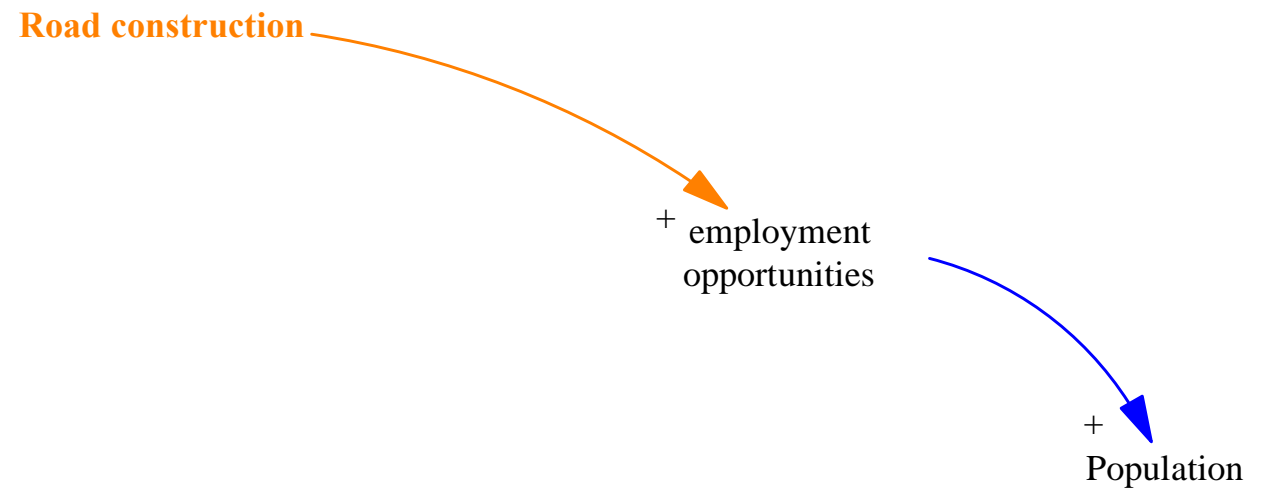


# ADVANTAGES: Technical value addition

- Multi-stakeholder process, allows for the incorporation of indicators across sectors.
- Estimates social, economic and environmental impacts of action and inaction (internalizing externalities) through the endogenous calculation of cross-sectoral indicators.
- Incorporates of biophysical variables in the evaluation of the economic performance of the sectors, informing policy making.

**Road construction**







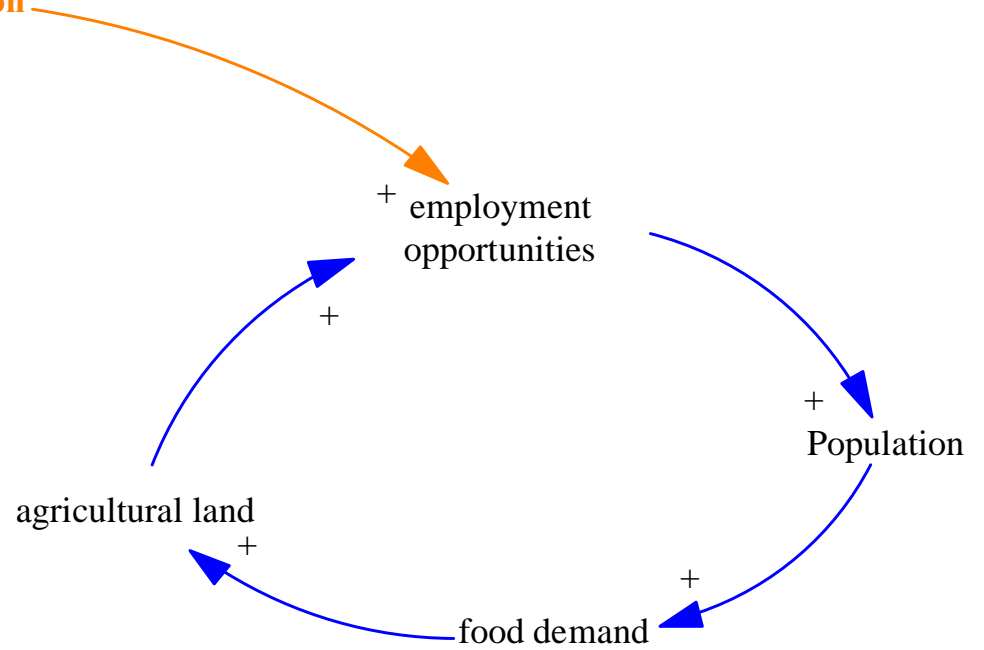
**Road construction**

+ employment  
opportunities

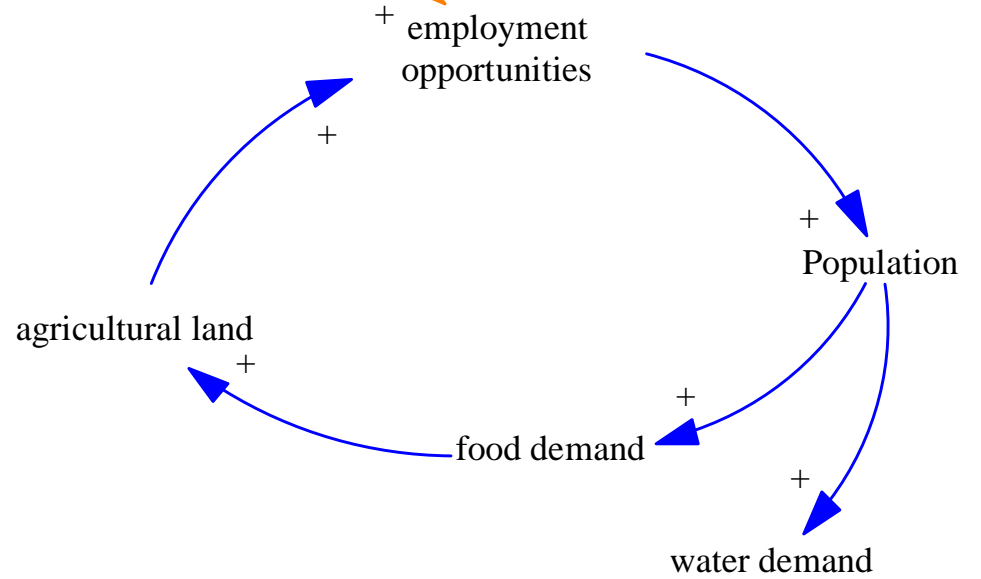
+  
Population

+  
food demand

**Road construction**



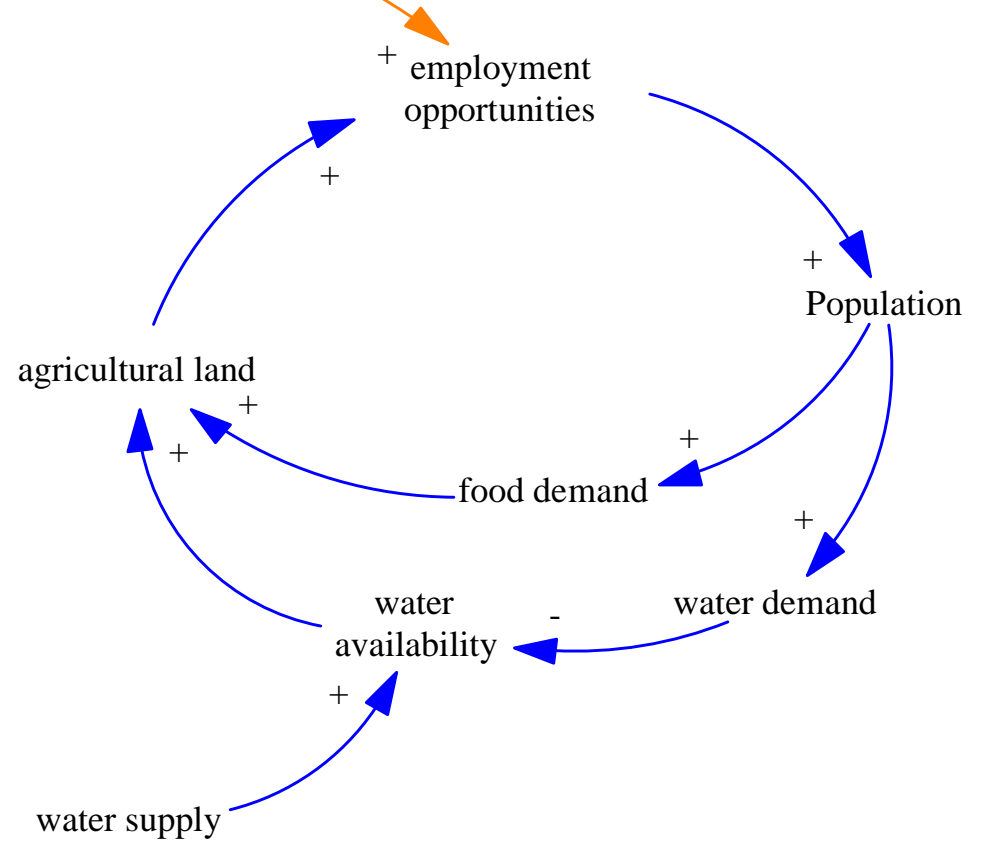
**Road construction**

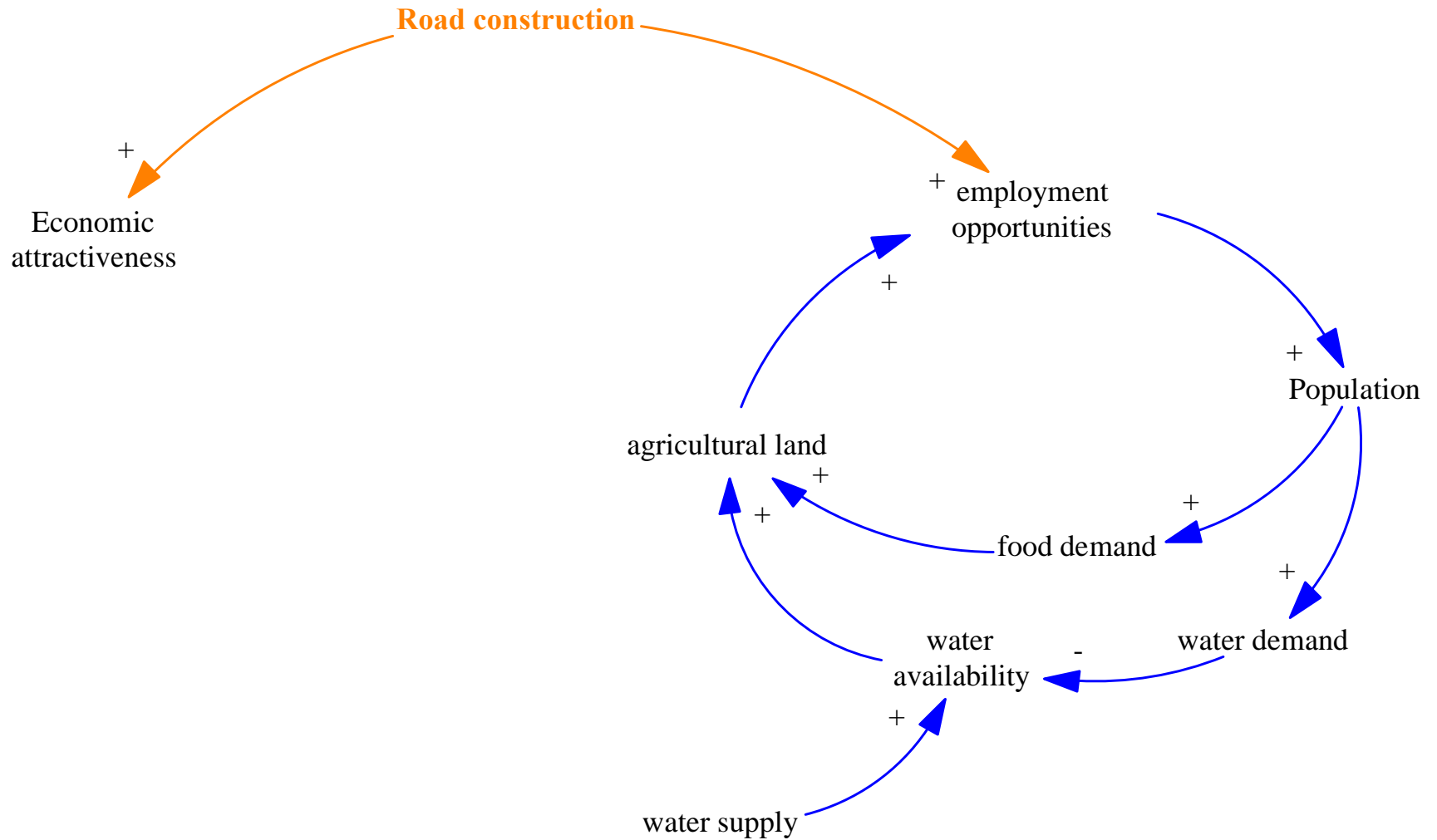




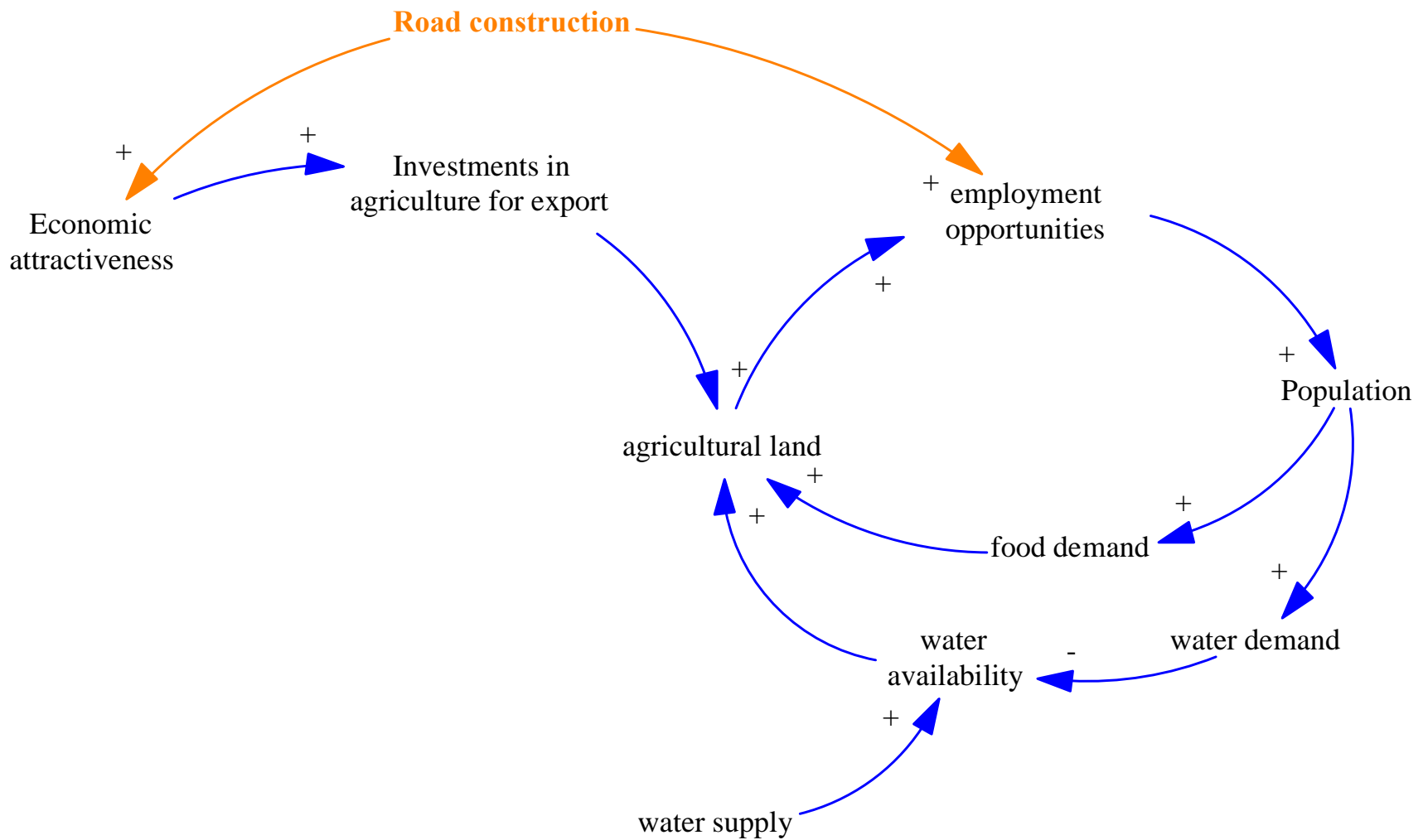


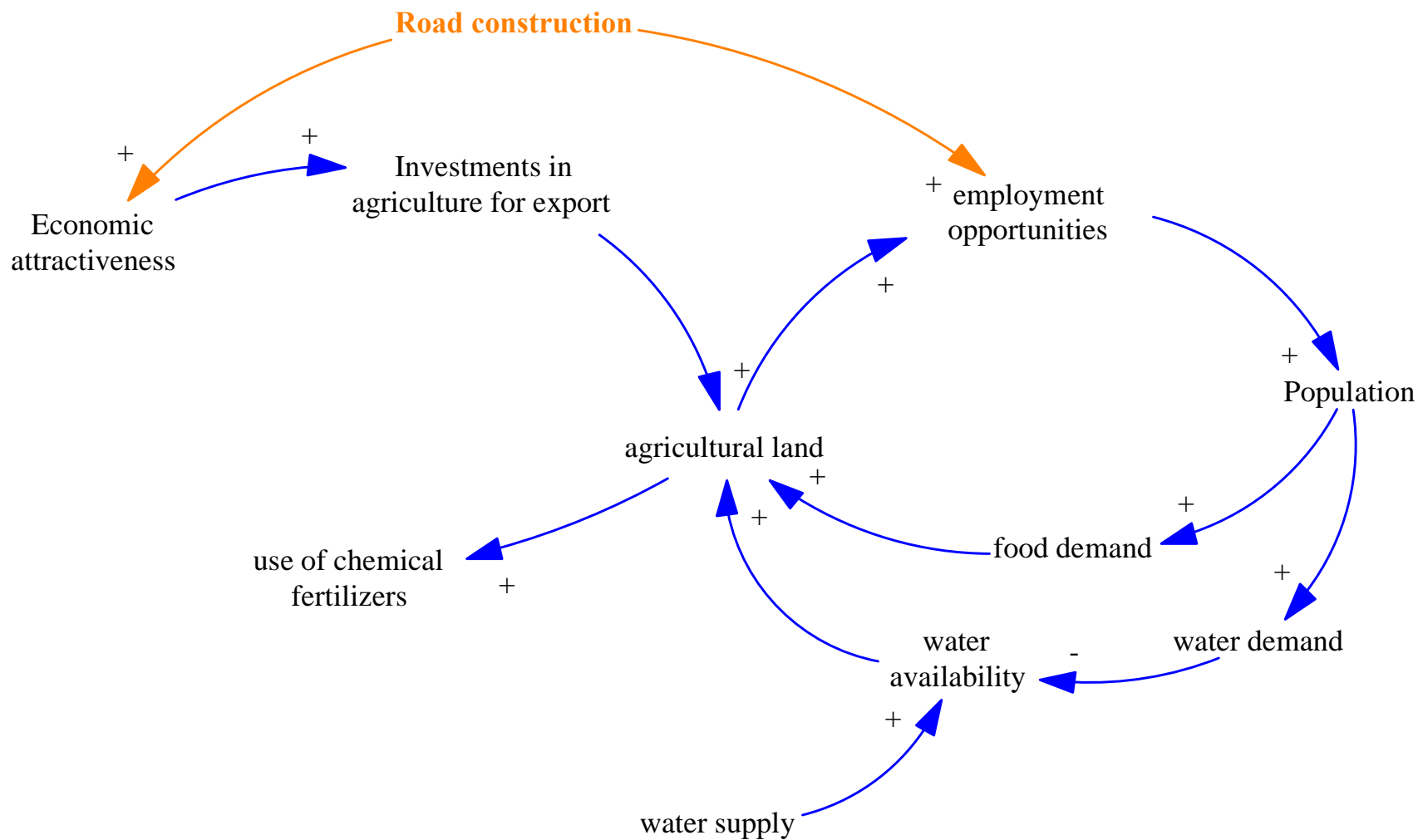
Road construction

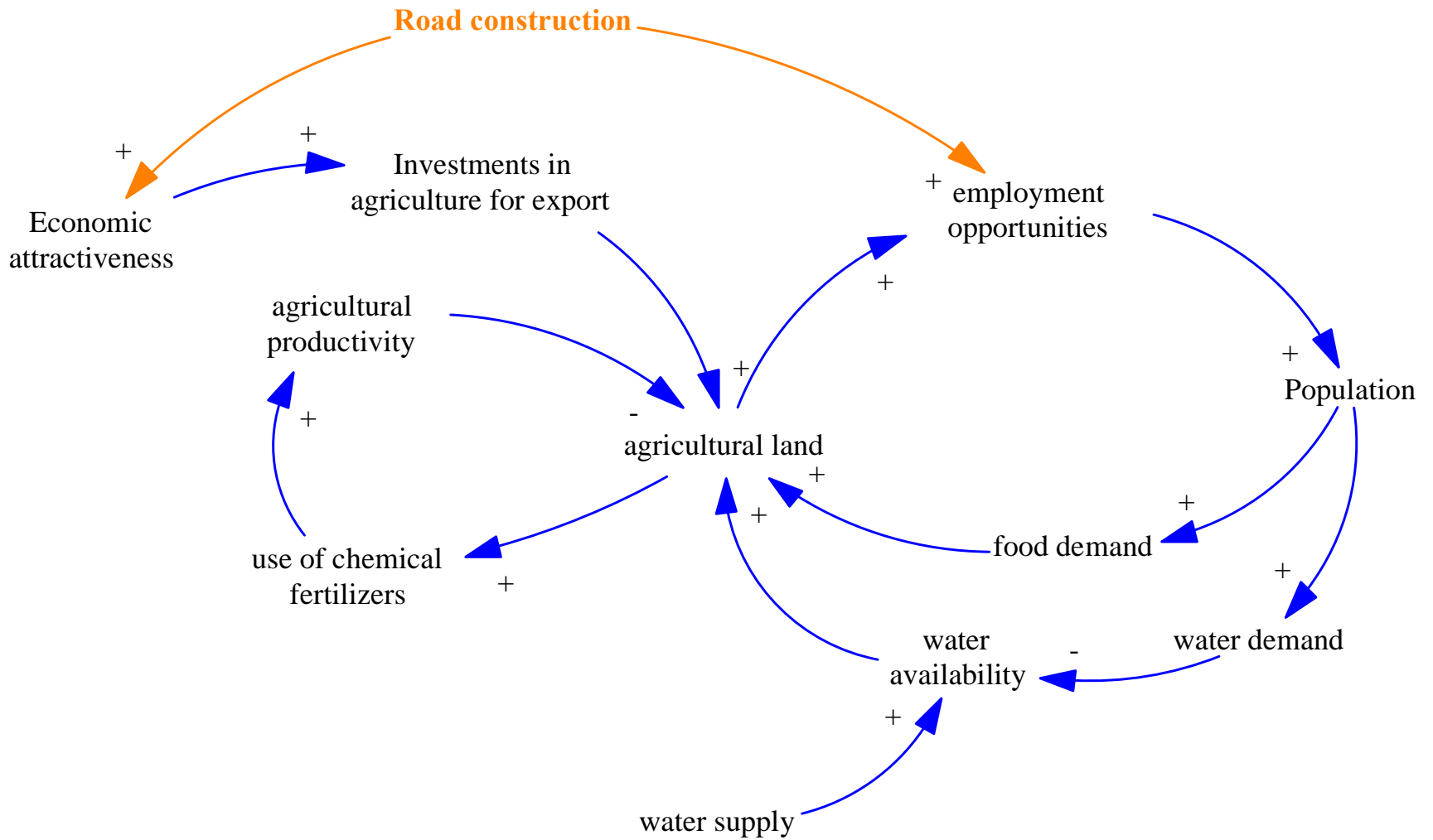






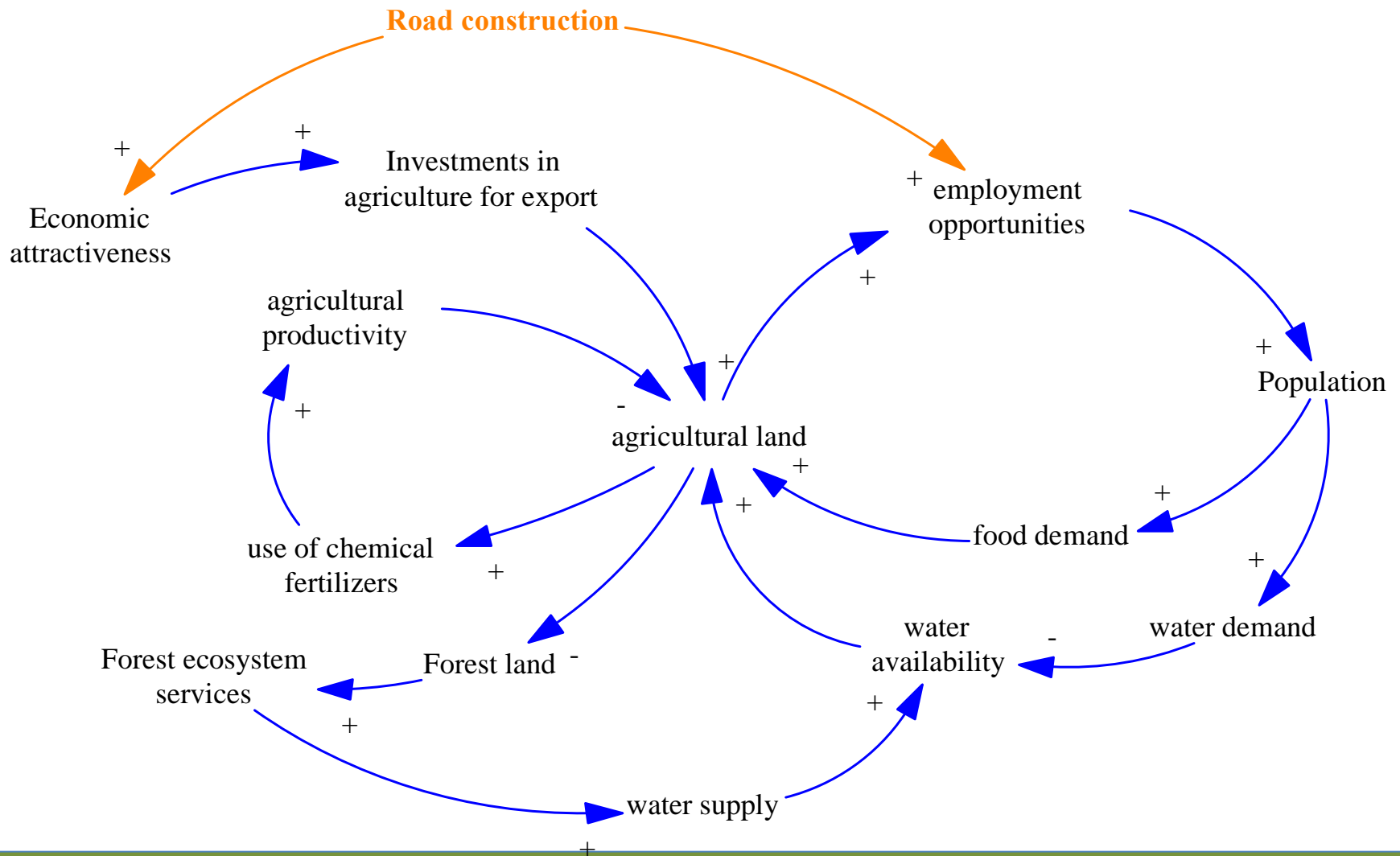


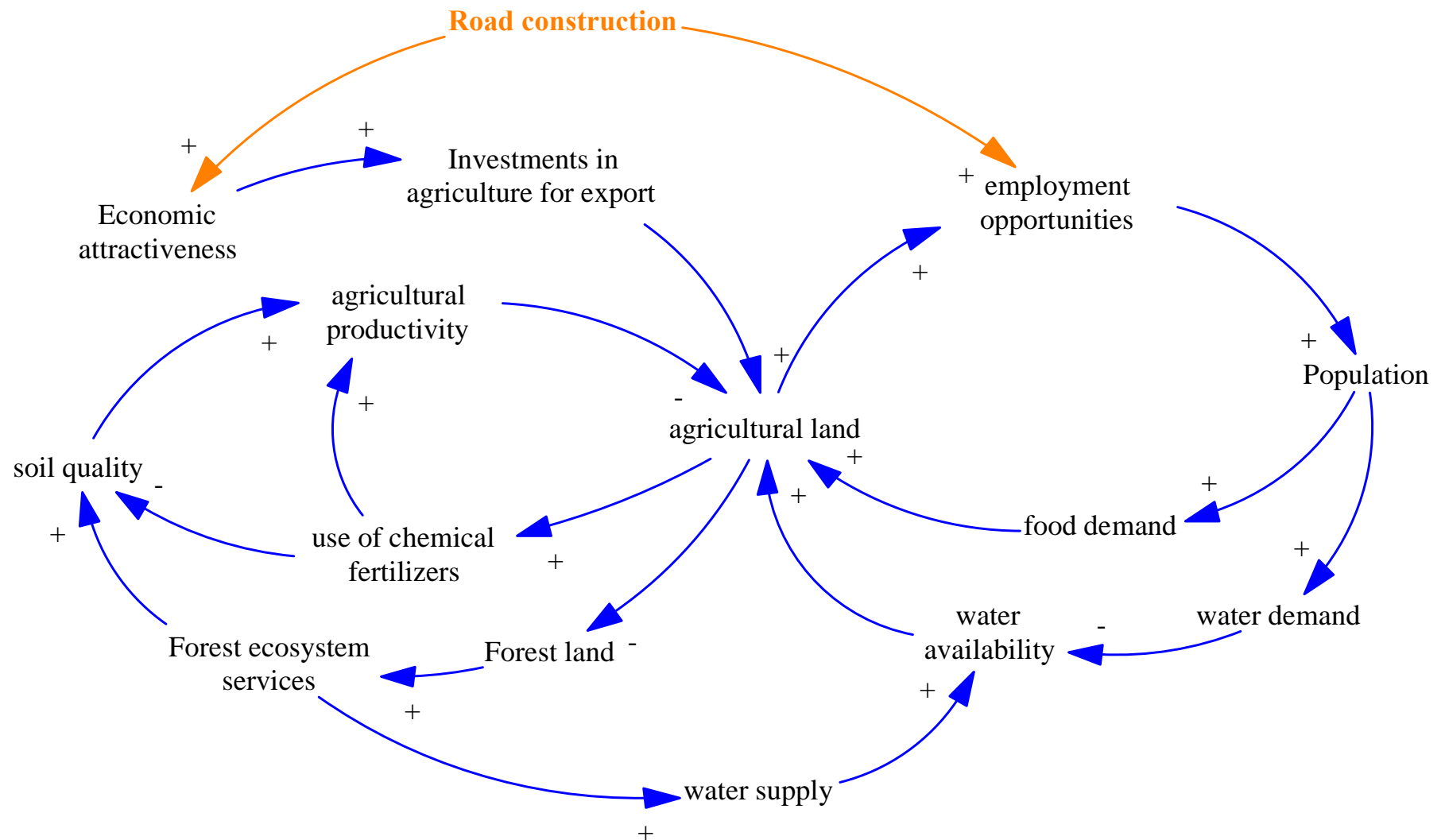


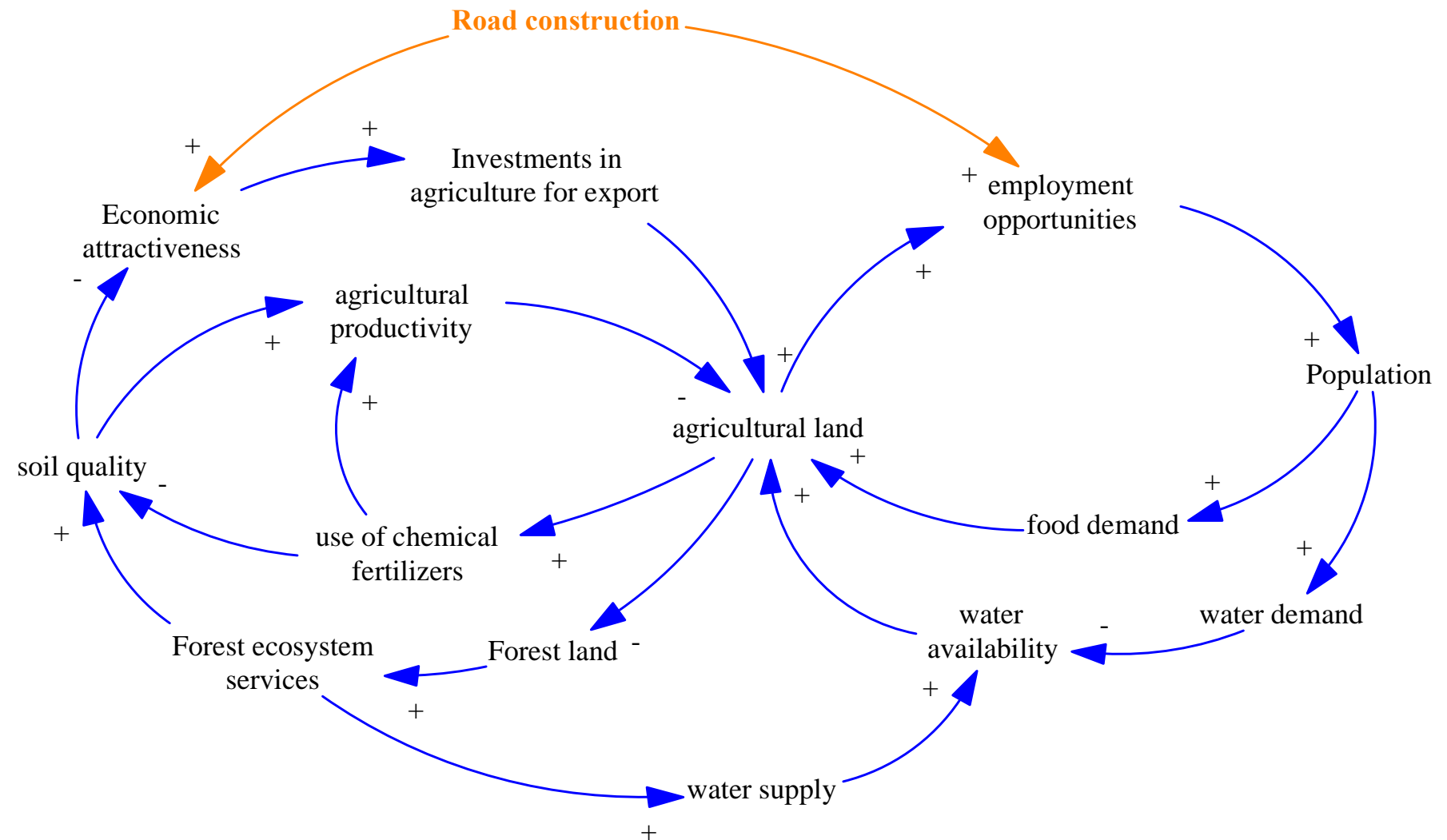


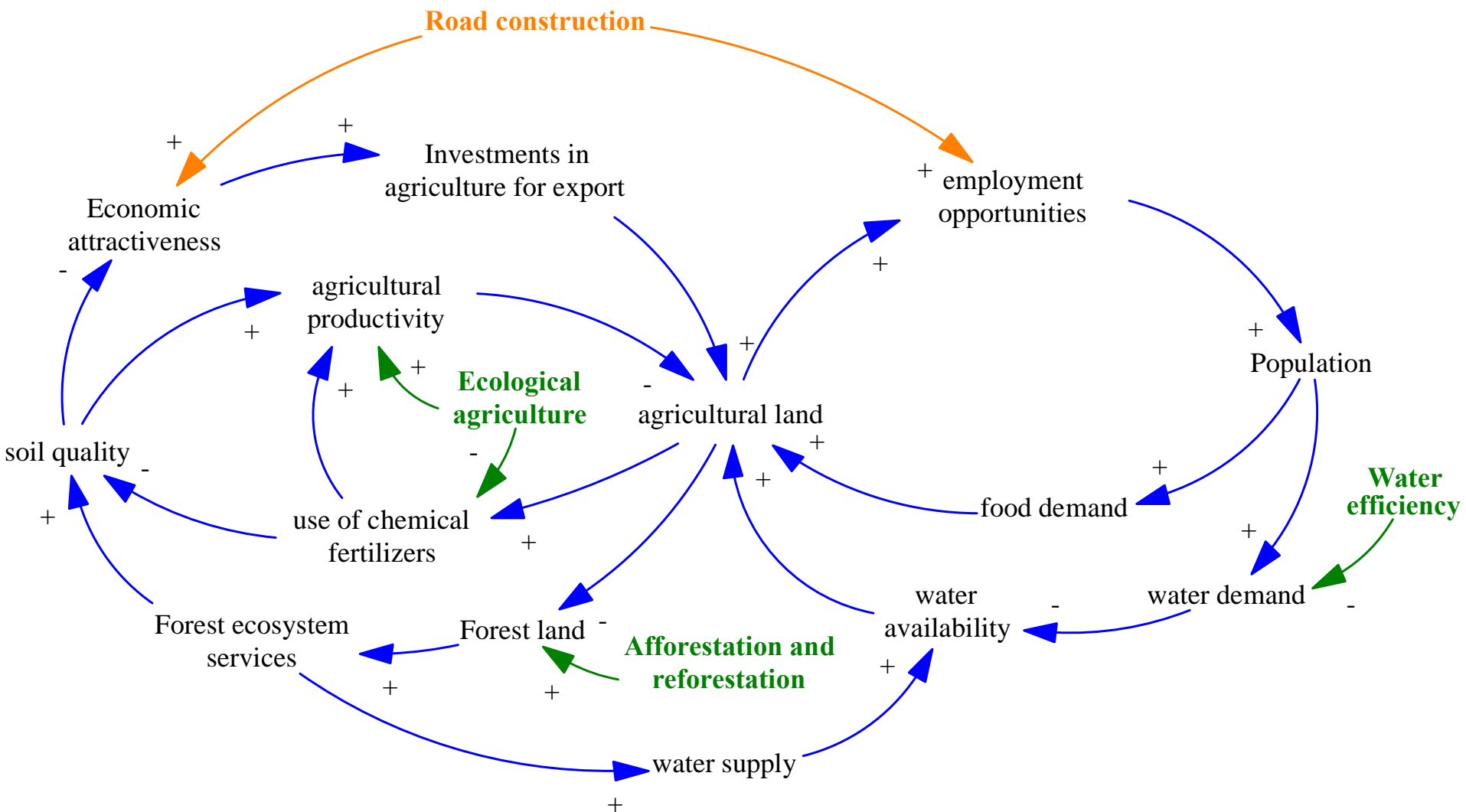




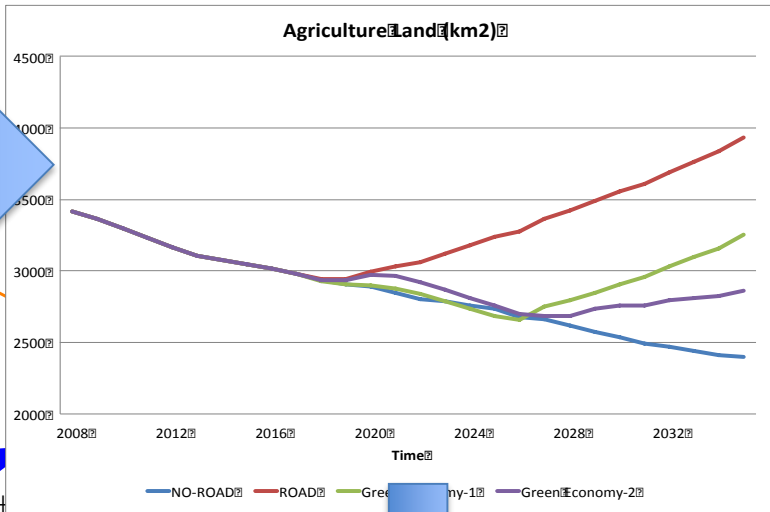
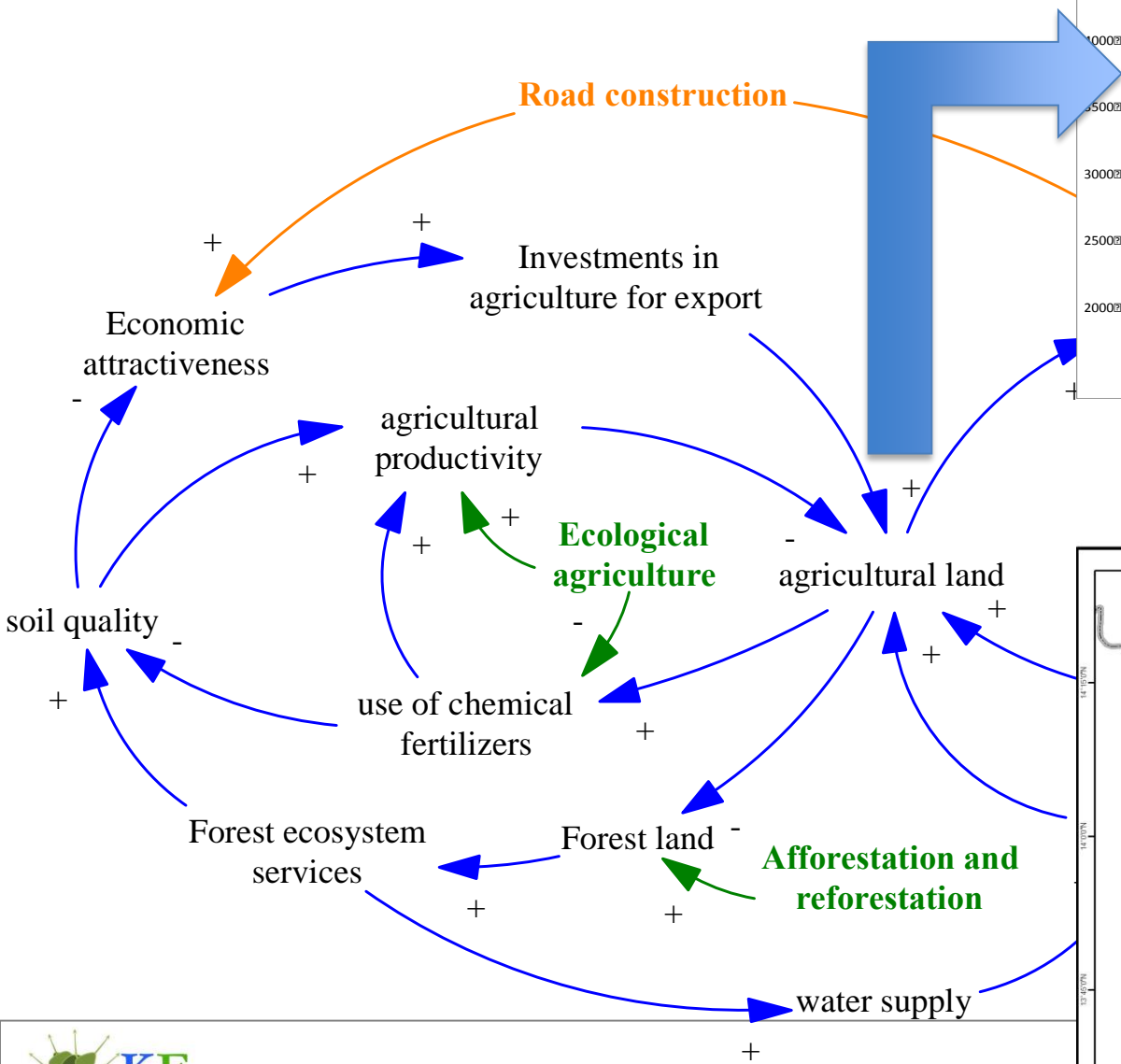




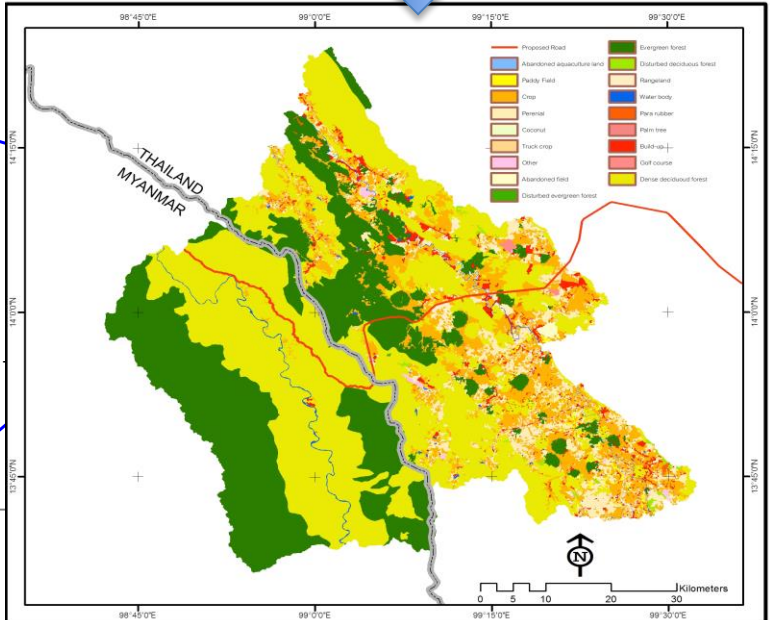




# THE RESULTS

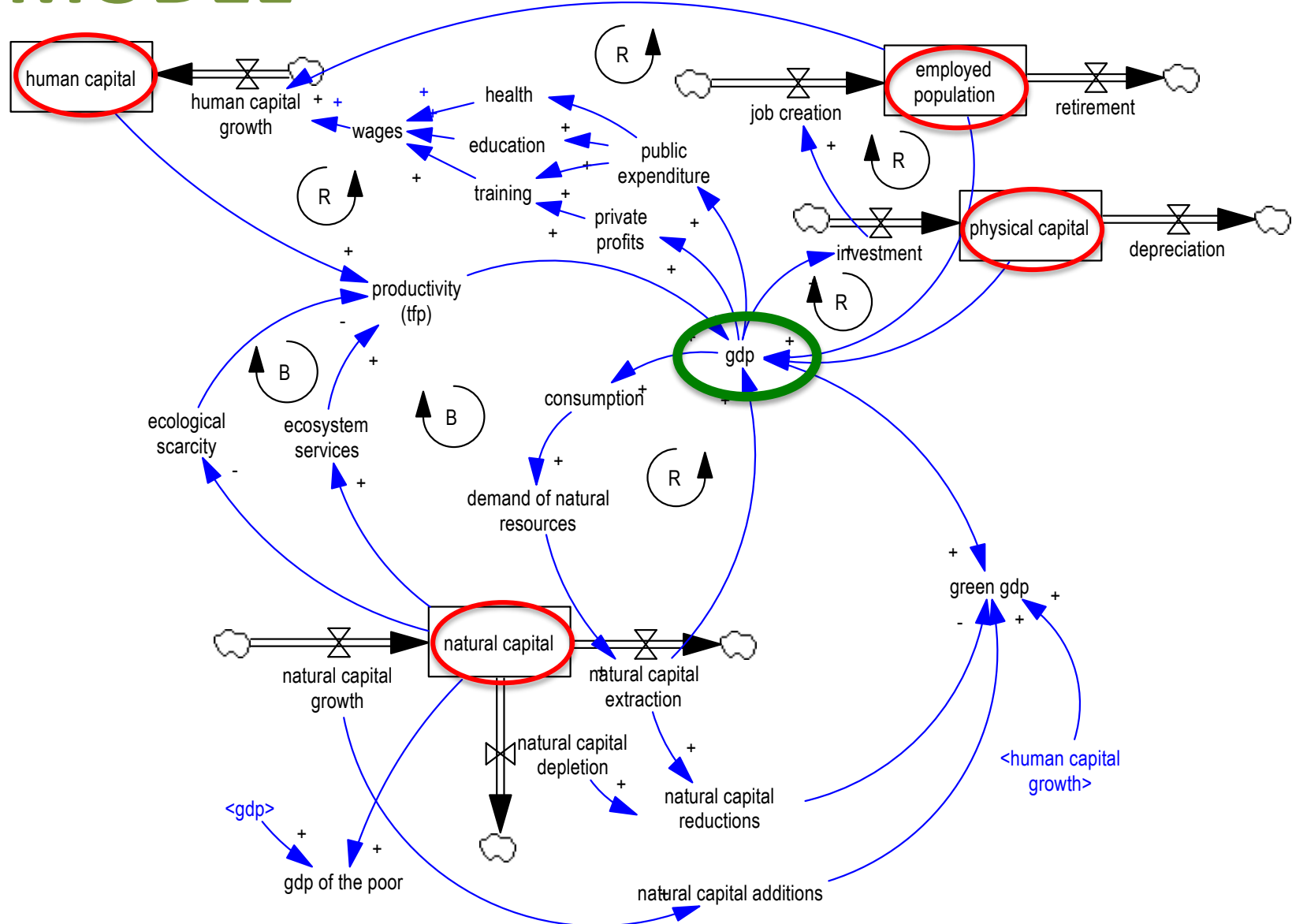


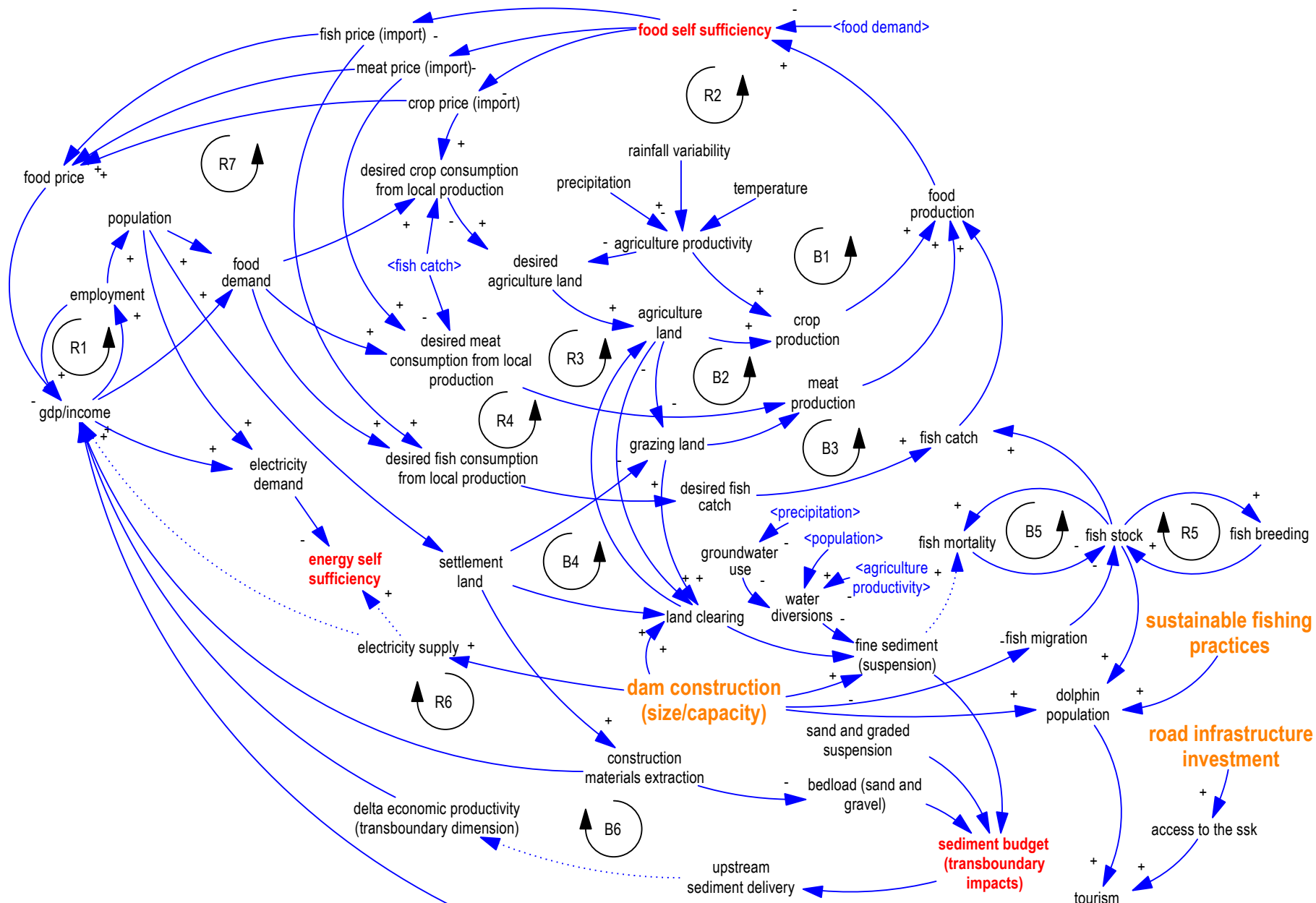
**Population**

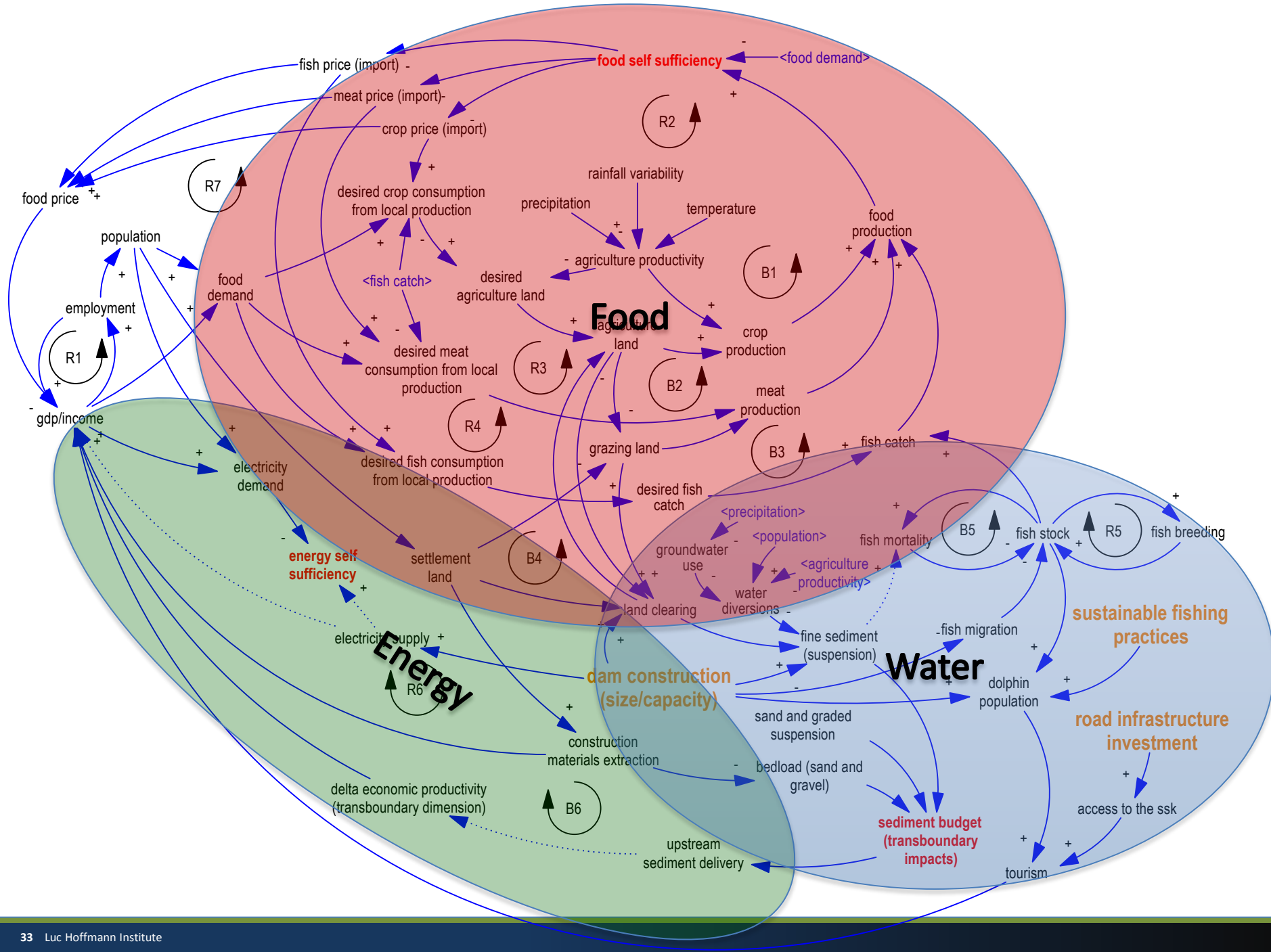




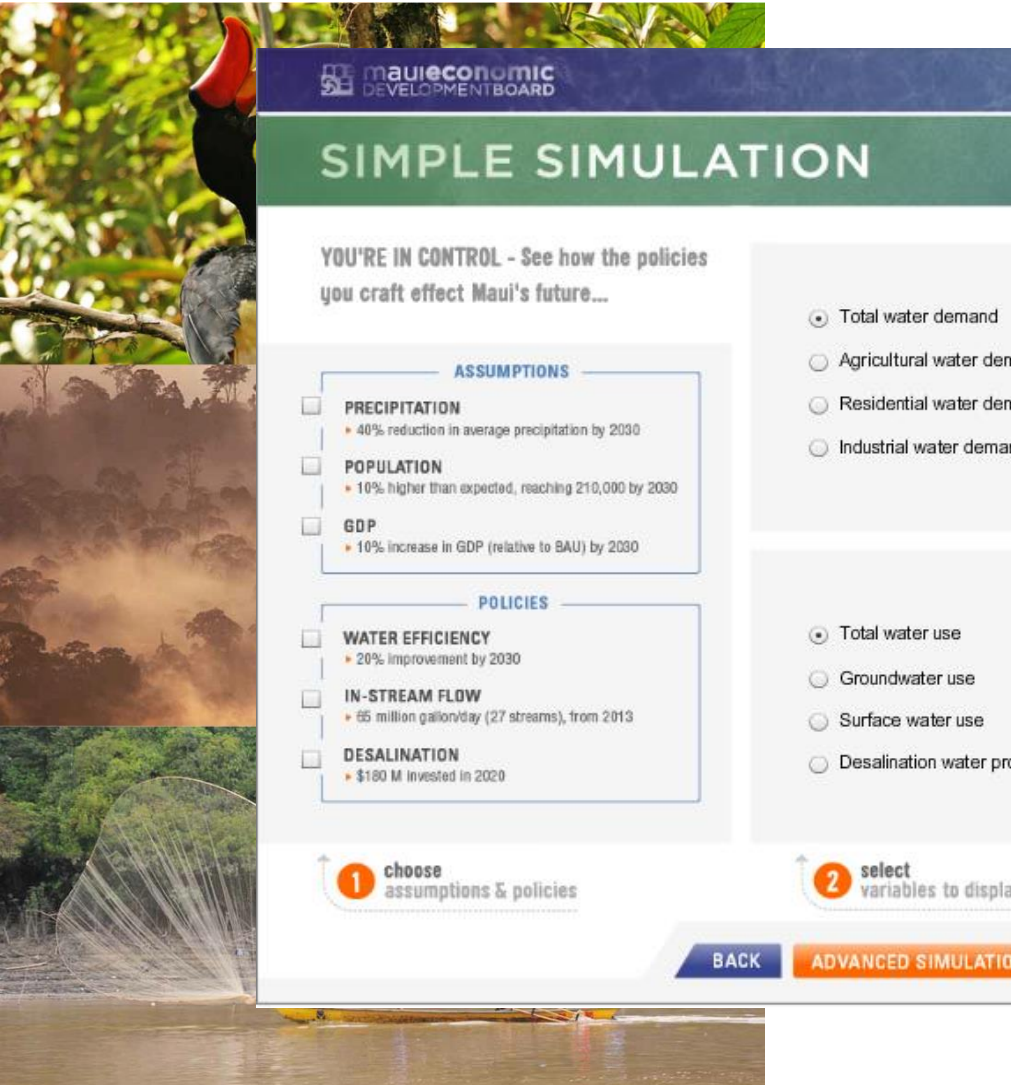
# THE MODEL







# THE IMPACT



**maui economic DEVELOPMENT BOARD**

## SIMPLE SIMULATION

**YOU'RE IN CONTROL - See how the policies you craft effect Maui's future...**

**ASSUMPTIONS**

- ☐ **PRECIPITATION**
  - 40% reduction in average precipitation by 2030
- ☐ **POPULATION**
  - 10% higher than expected, reaching 210,000 by 2030
- ☐ **GDP**
  - 10% increase in GDP (relative to BAU) by 2030

**POLICIES**

- ☐ **WATER EFFICIENCY**
  - 20% improvement by 2030
- ☐ **IN-STREAM FLOW**
  - 65 million gallon/day (27 streams), from 2013
- ☐ **DESALINATION**
  - \$180 M invested in 2020

**1 choose assumptions & policies**

**2 select variables to display**

**BACK** **ADVANCED SIMULATION**



Republic of Mauritius

Long-Term Energy Strategy

2009 – 2025



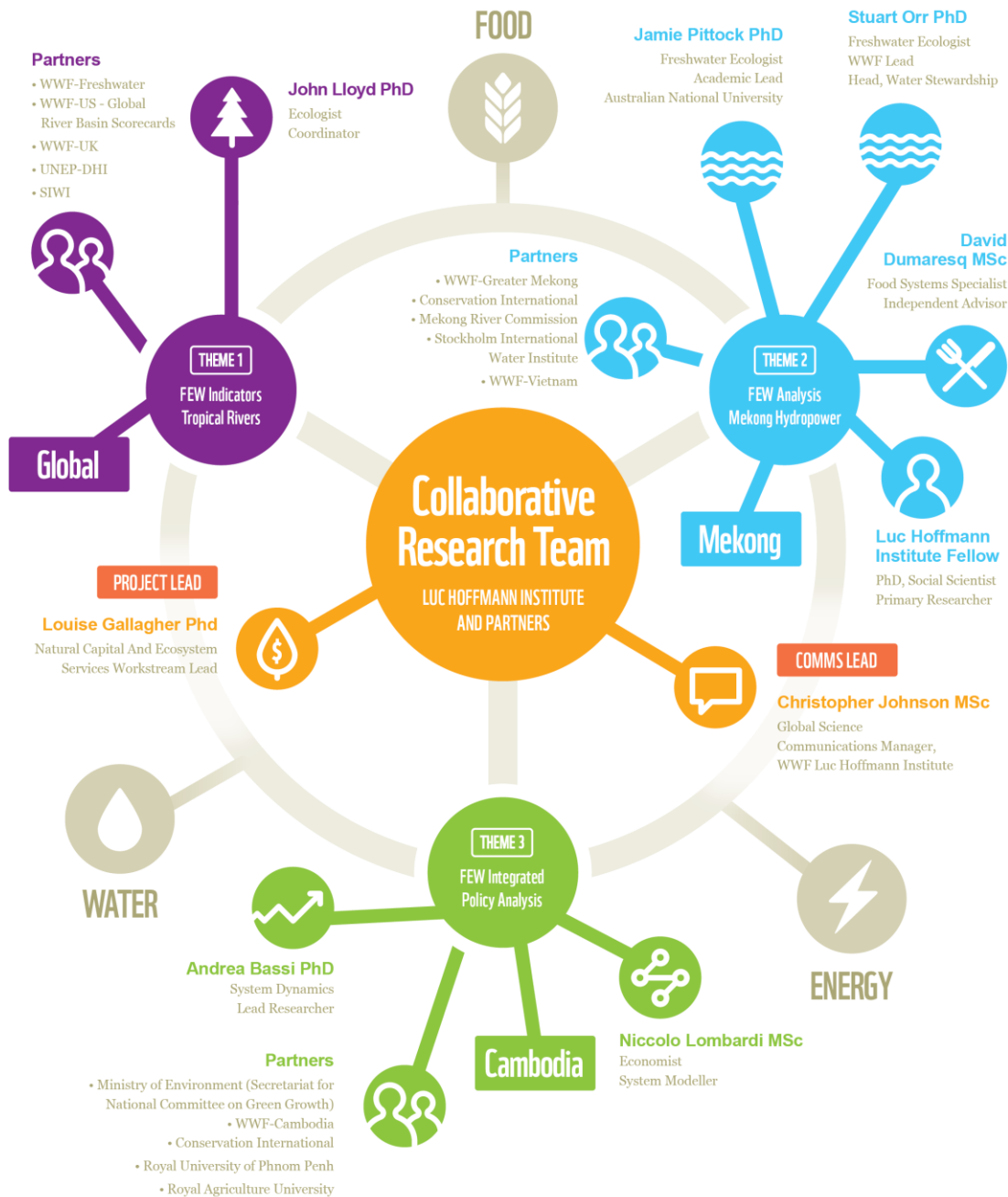
October 2009

Ministry of Renewable Energy  
&  
Public Utilities

## RESEARCH PROJECT

### Linked Indicators for Vital Ecosystem Services (LIVES)

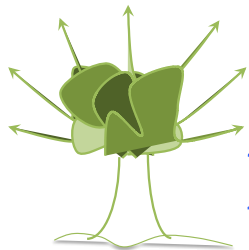
To study FOOD ENERGY WATER  
(FEW) security, we work together  
in a collaborative research team.



# Thank you!

For more information you  
can reach me at:

[andrea.bassi@ke-srl.com](mailto:andrea.bassi@ke-srl.com)



**KnowlEdge** Srl

