



HOW CAUSAL LOOP DIAGRAMS ARE DESIGNED





Overview of Causal Loop Diagrams: process

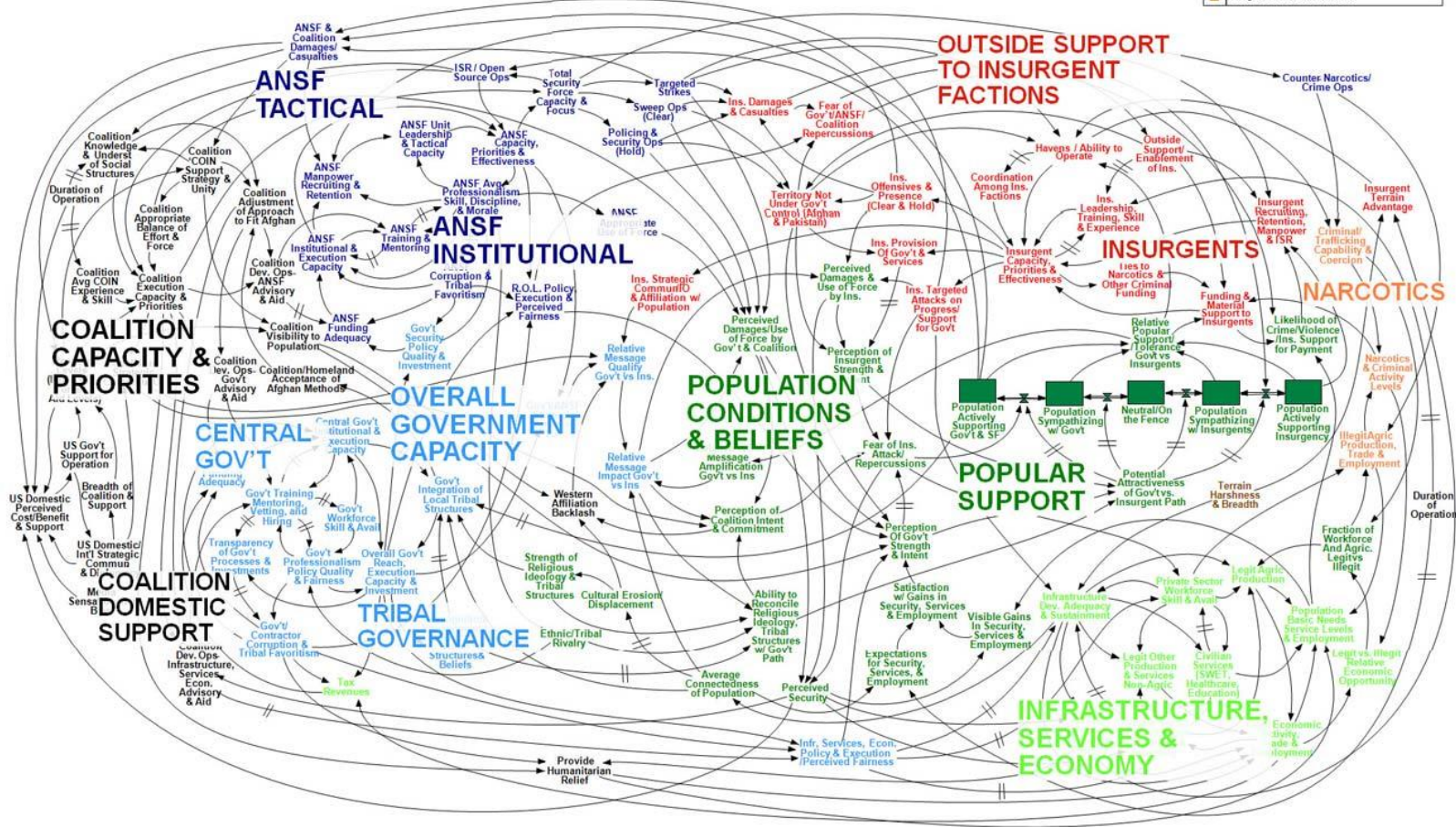
1. Identify the sector
2. Identify the main problem/investment opportunity
3. Identify the main variable describing the problem/opportunity and add it to the diagram
4. Identify the main factors influencing the problem/opportunity
5. Add them (as new variables) to the diagram
6. Add the polarity (+ or – sign for each arrow)
7. Identify the factors influencing the cause of the problem/opportunity... *and continue from 5 above*



Afghanistan Stability / COIN Dynamics

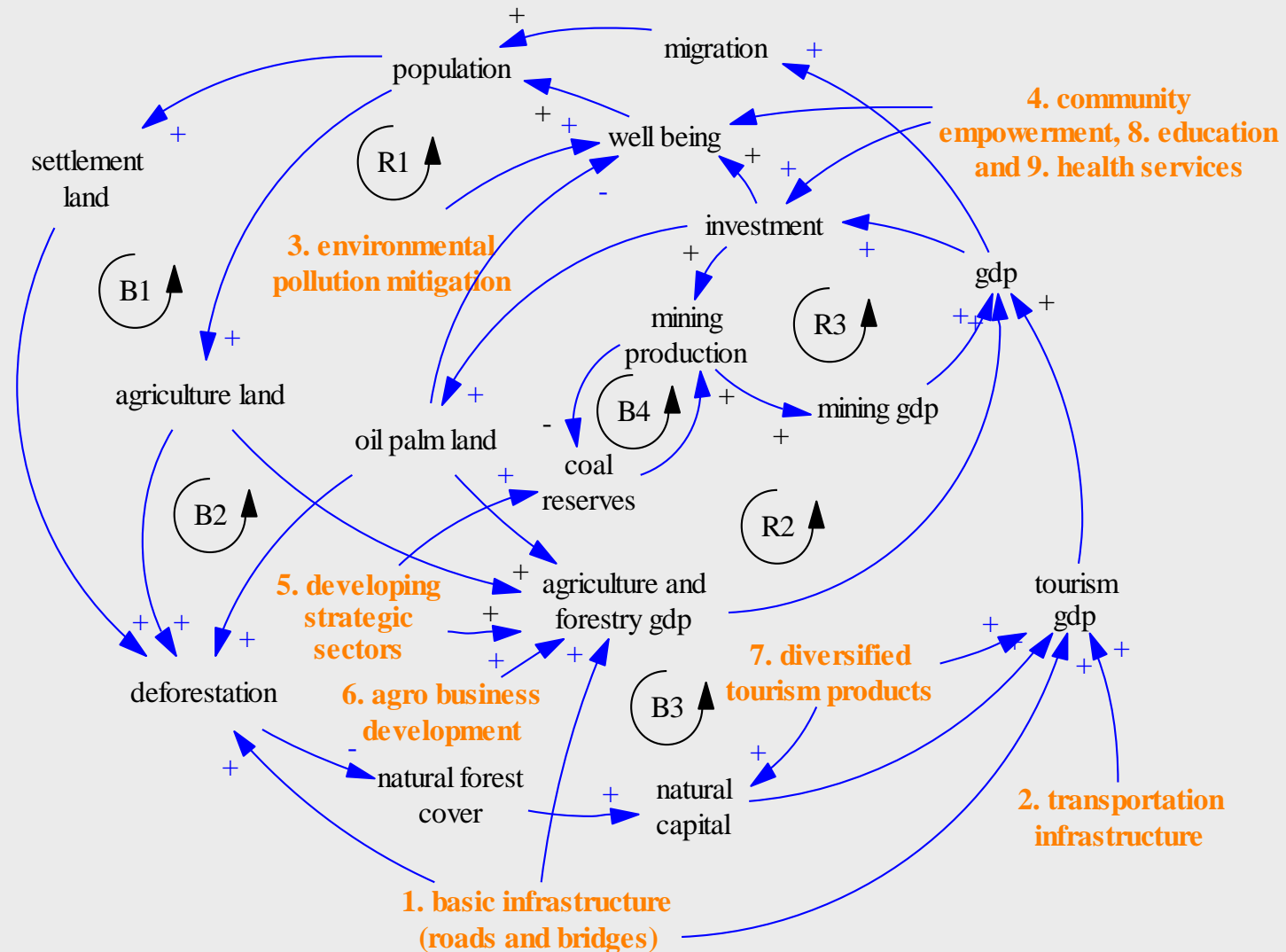
= Significant Delay

- Population/Popular Support
- Infrastructure, Economy, & Services
- Government
- Afghanistan Security Forces
- Insurgents
- Crime and Narcotics
- Coalition Forces & Actions
- Physical Environment



WORKING DRAFT - V3

Overview of Causal Loop Diagrams: process





Advice 1

- Start from 1 variable, add the others one by one

System mapping for the 'Road to Dawei'



Road construction



+ employment
opportunities



Advice 2

- Start from 1 variable, add the others one by one
- Identify and add causal relations (blue arrow) and add polarity to the arrows (+ or -)



Overview of Causal Loop Diagrams: polarity

- Signing: Add a '+' or a '-' sign at each arrowhead to convey more information
- A '+' is used *if the cause increases, the effect increases and if the cause decreases, the effect decreases*
- A '-' is used *if the cause increases, the effect decreases and if the cause decreases, the effect increases*

<i>Variable A</i>	<i>Variable B</i>	<i>Sign</i>
↑	↑	+
↓	↓	+
↑	↓	-
↓	↑	-

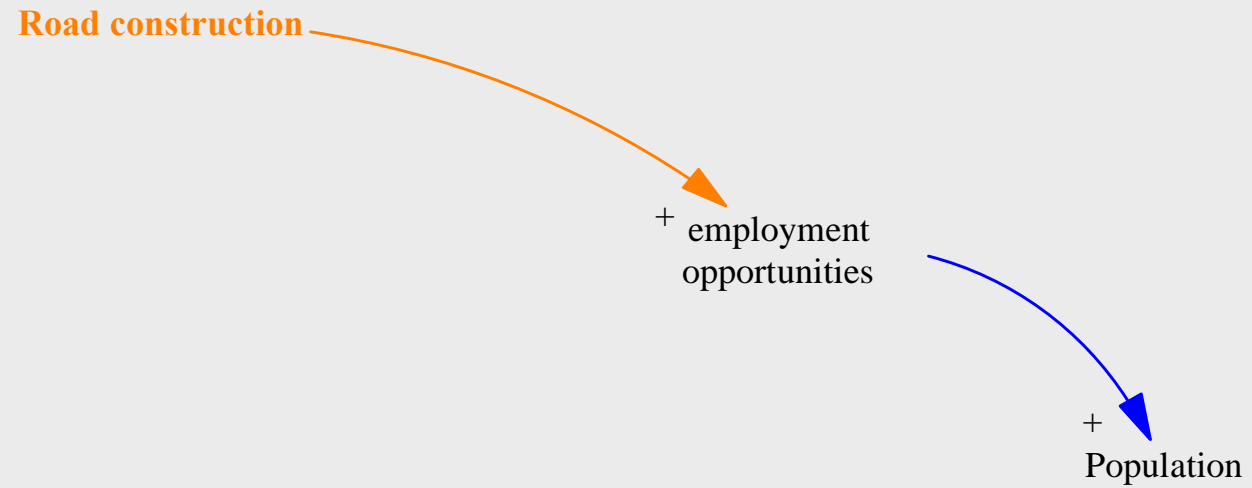
System mapping for the 'Road to Dawei'



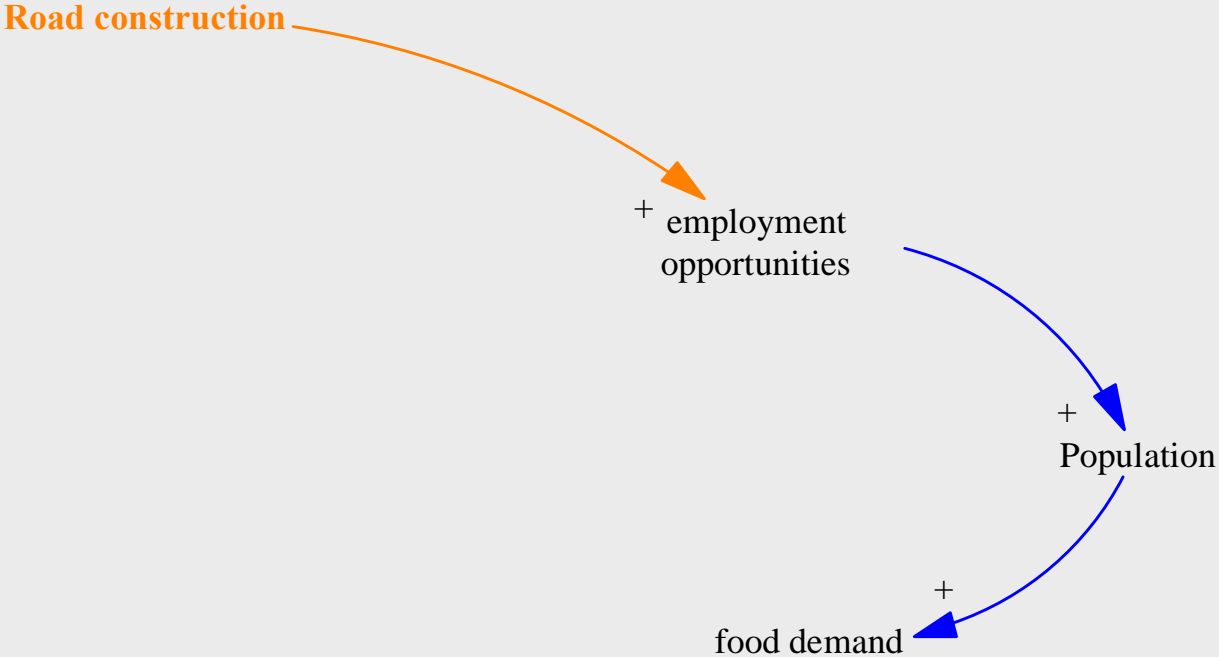
Road construction

+ employment opportunities

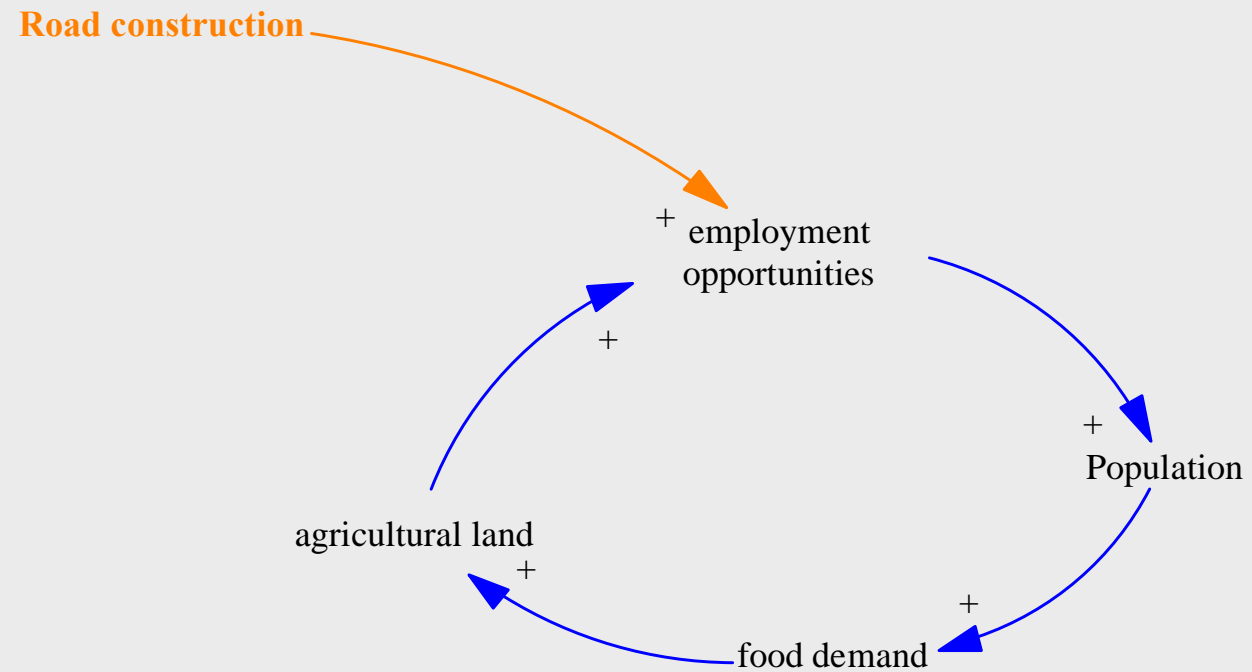
+ Population



System mapping for the 'Road to Dawei'



System mapping for the 'Road to Dawei'

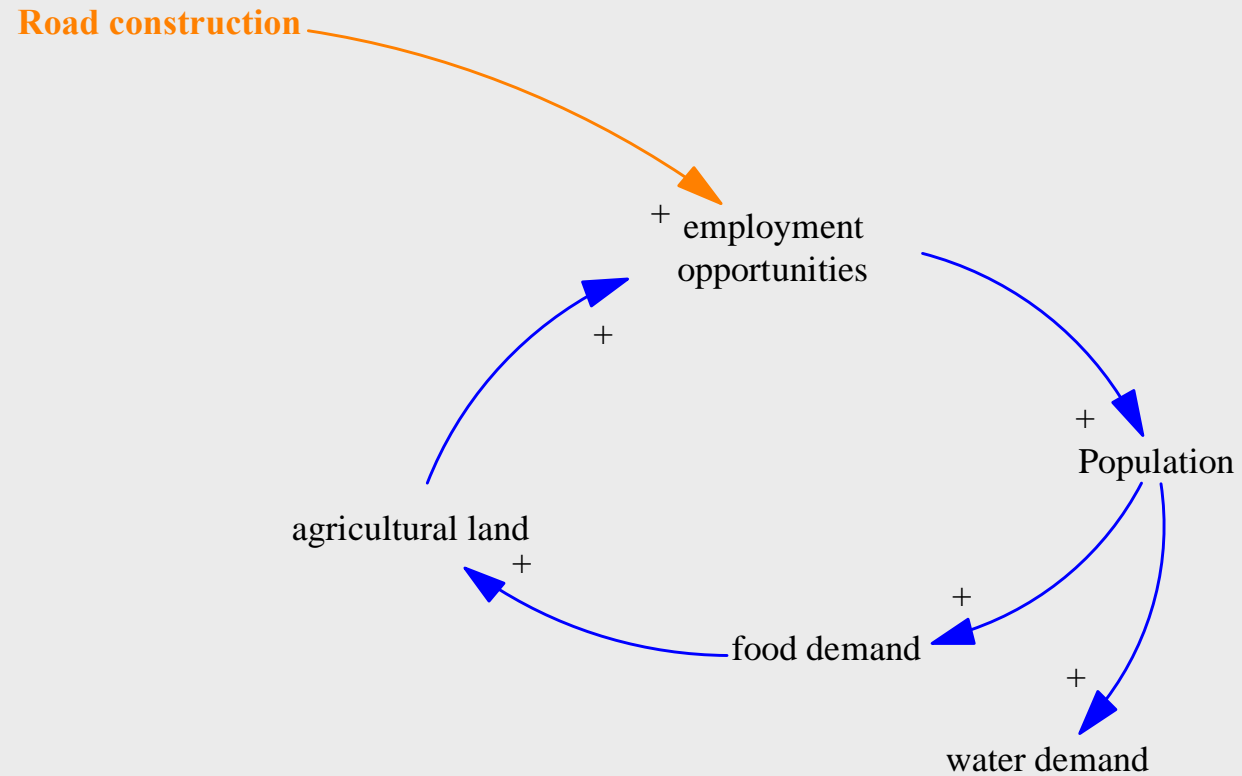




Advice 3

- Start from 1 variable, add the others one by one
- Identify and add causal relations (blue arrow) and add polarity to the arrows (+ or -)
- Identify and discuss feedback loops (circular relations)

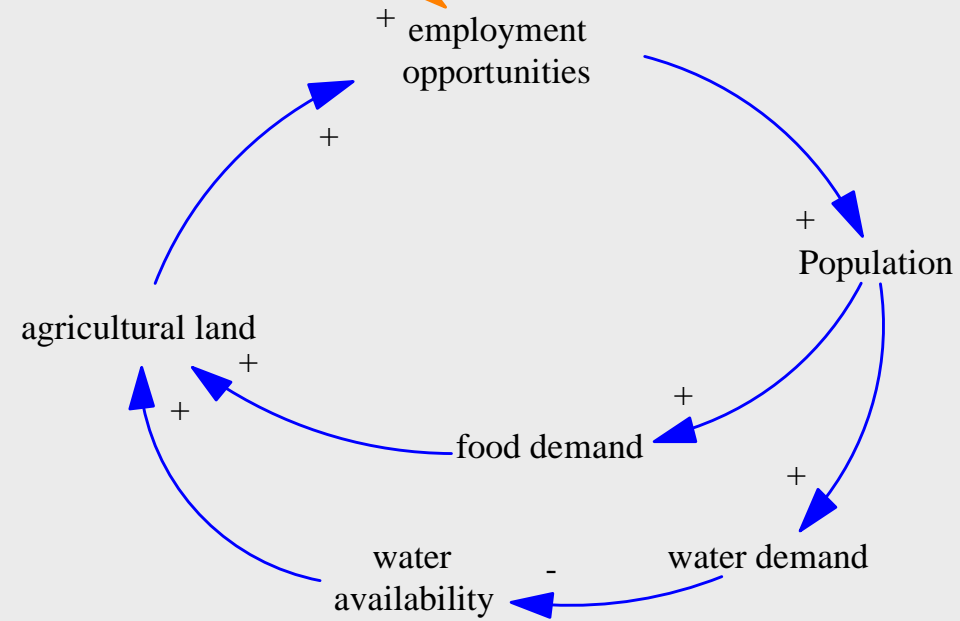
System mapping for the 'Road to Dawei'



System mapping for the 'Road to Dawei'



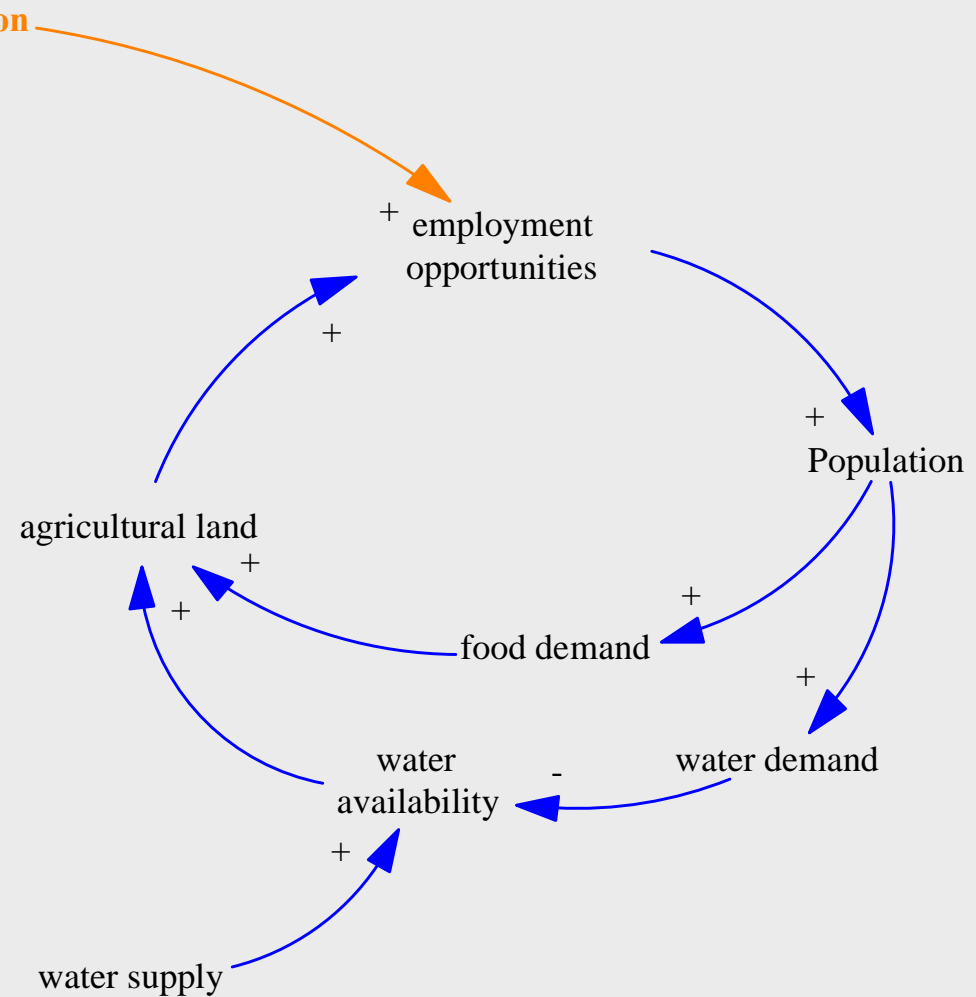
Road construction



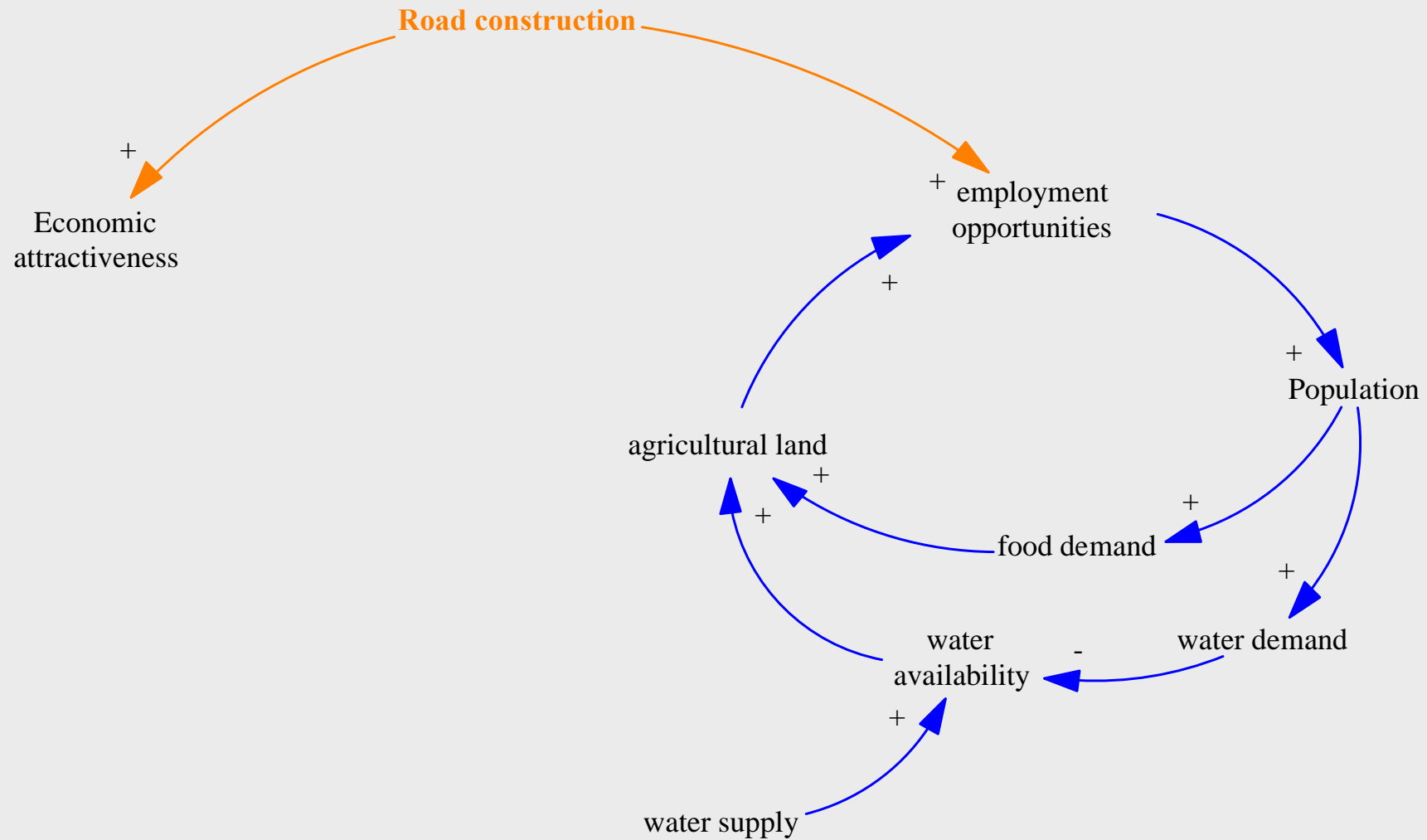
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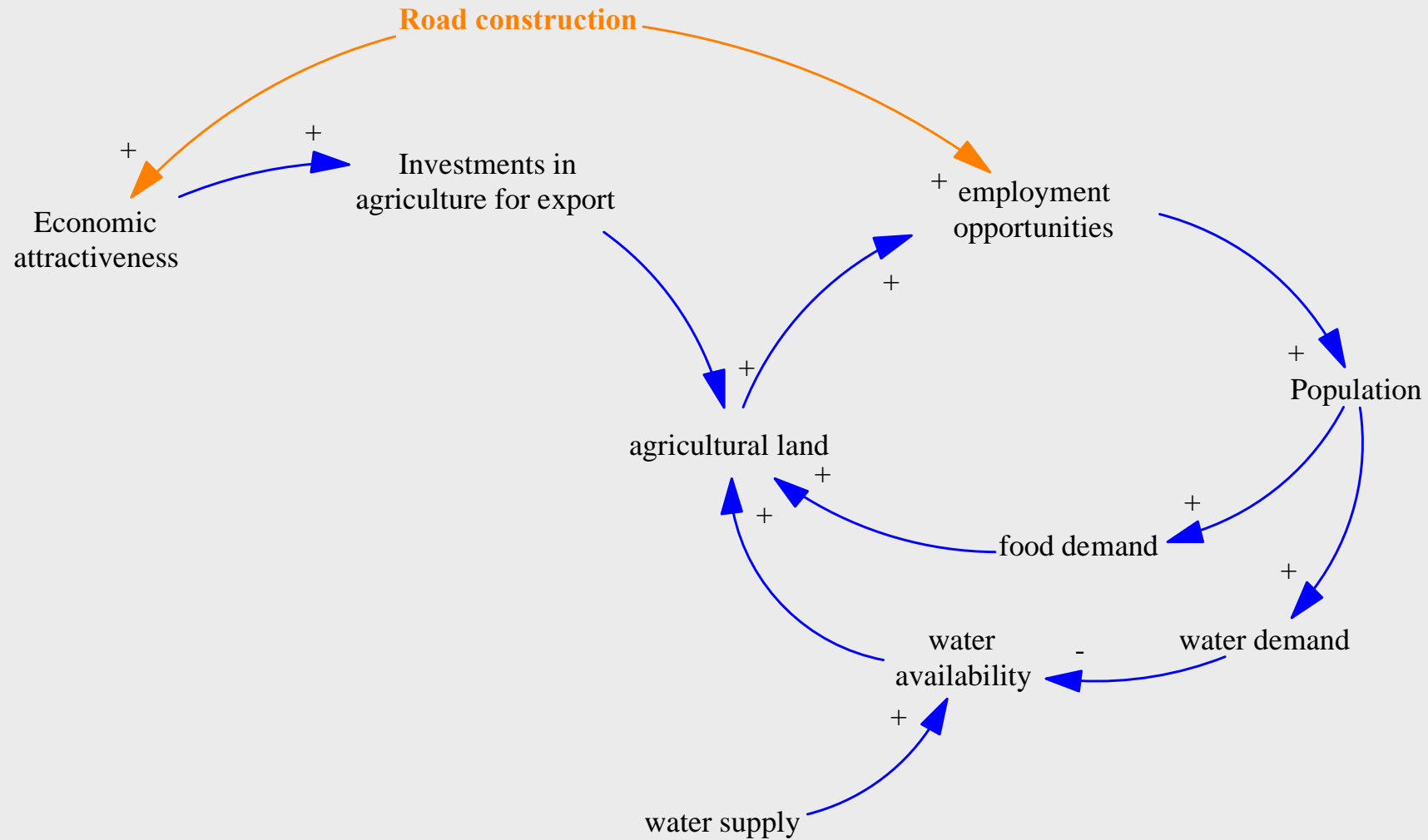
Road construction



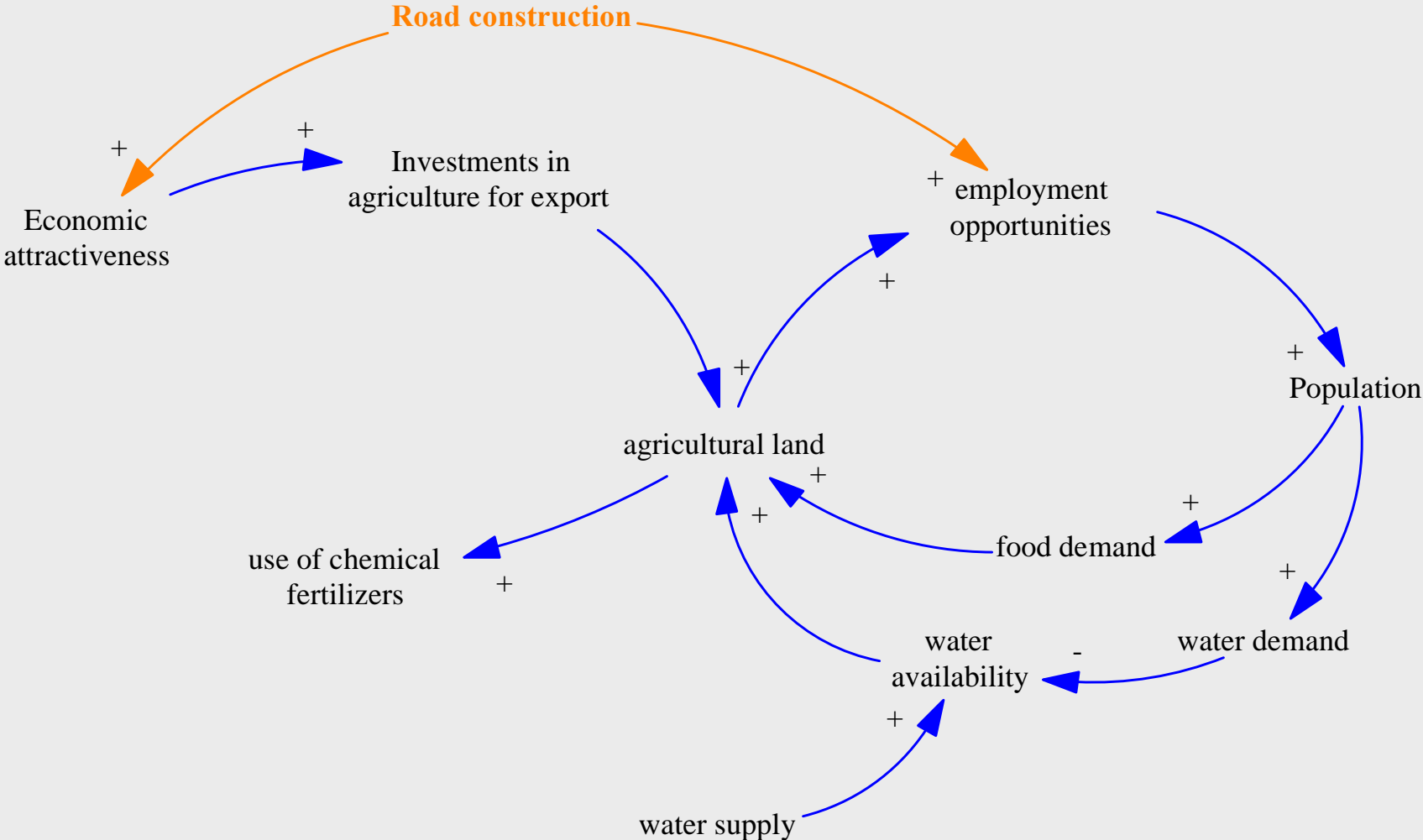
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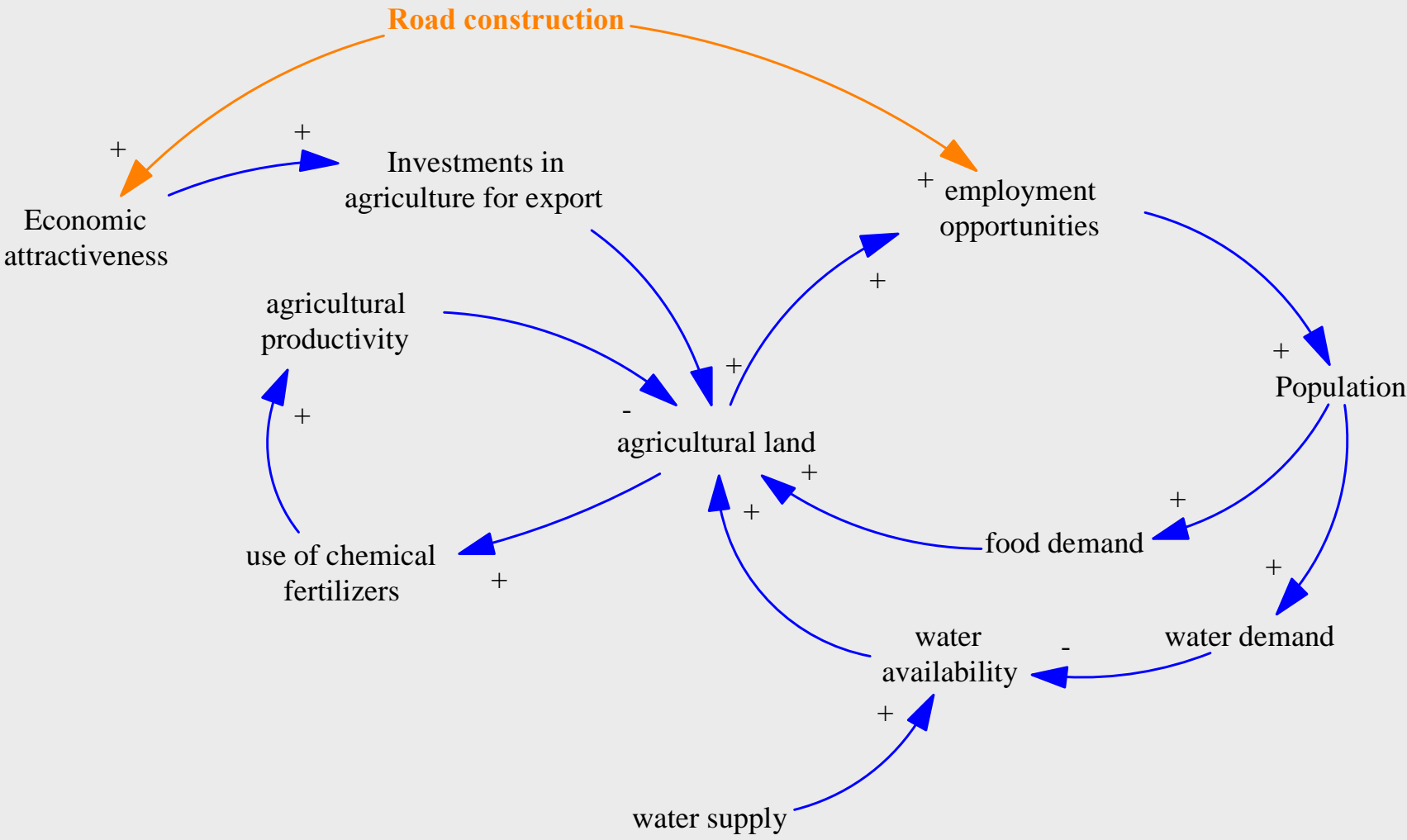
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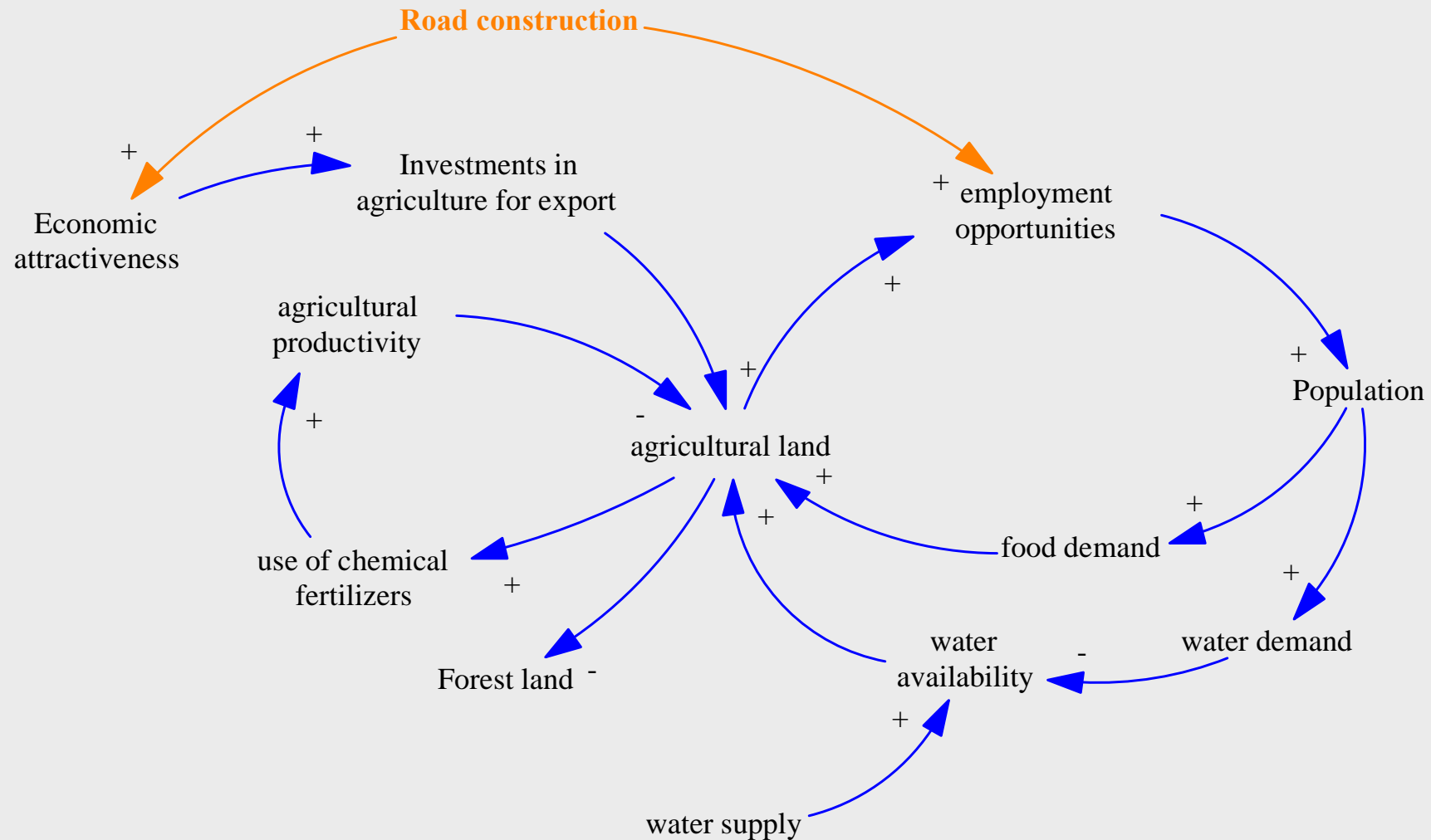
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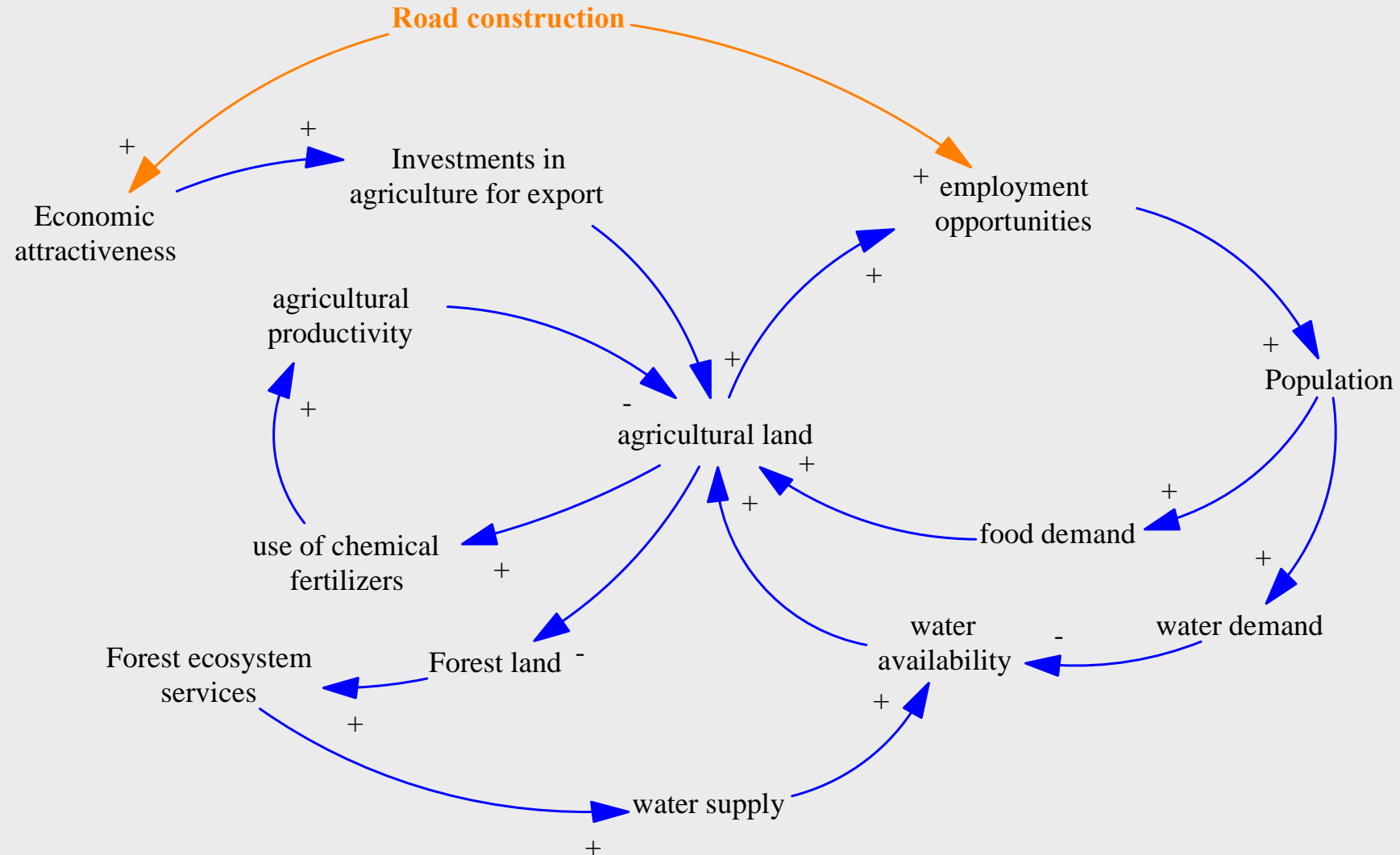
System mapping for the 'Road to Dawei'



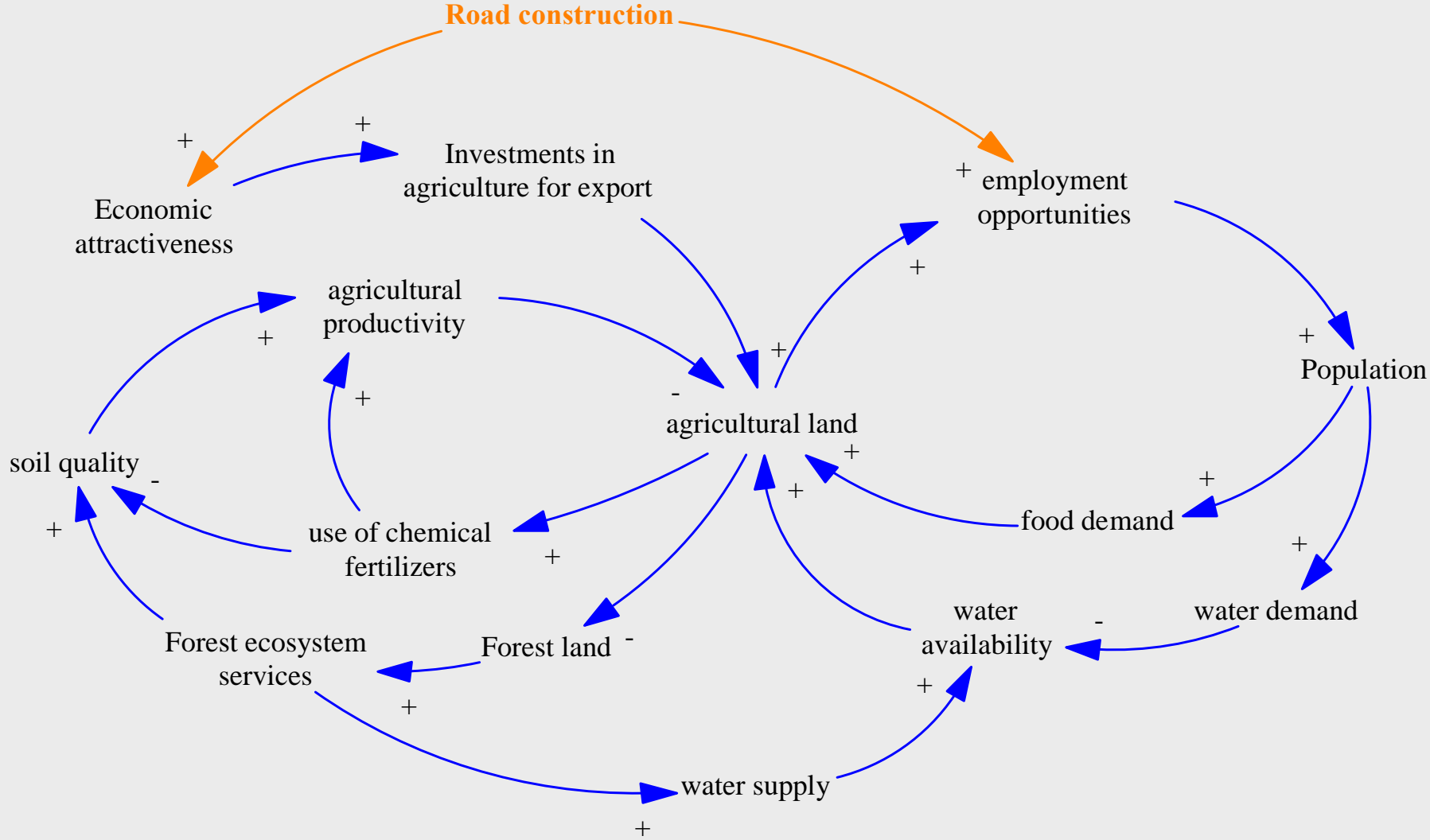
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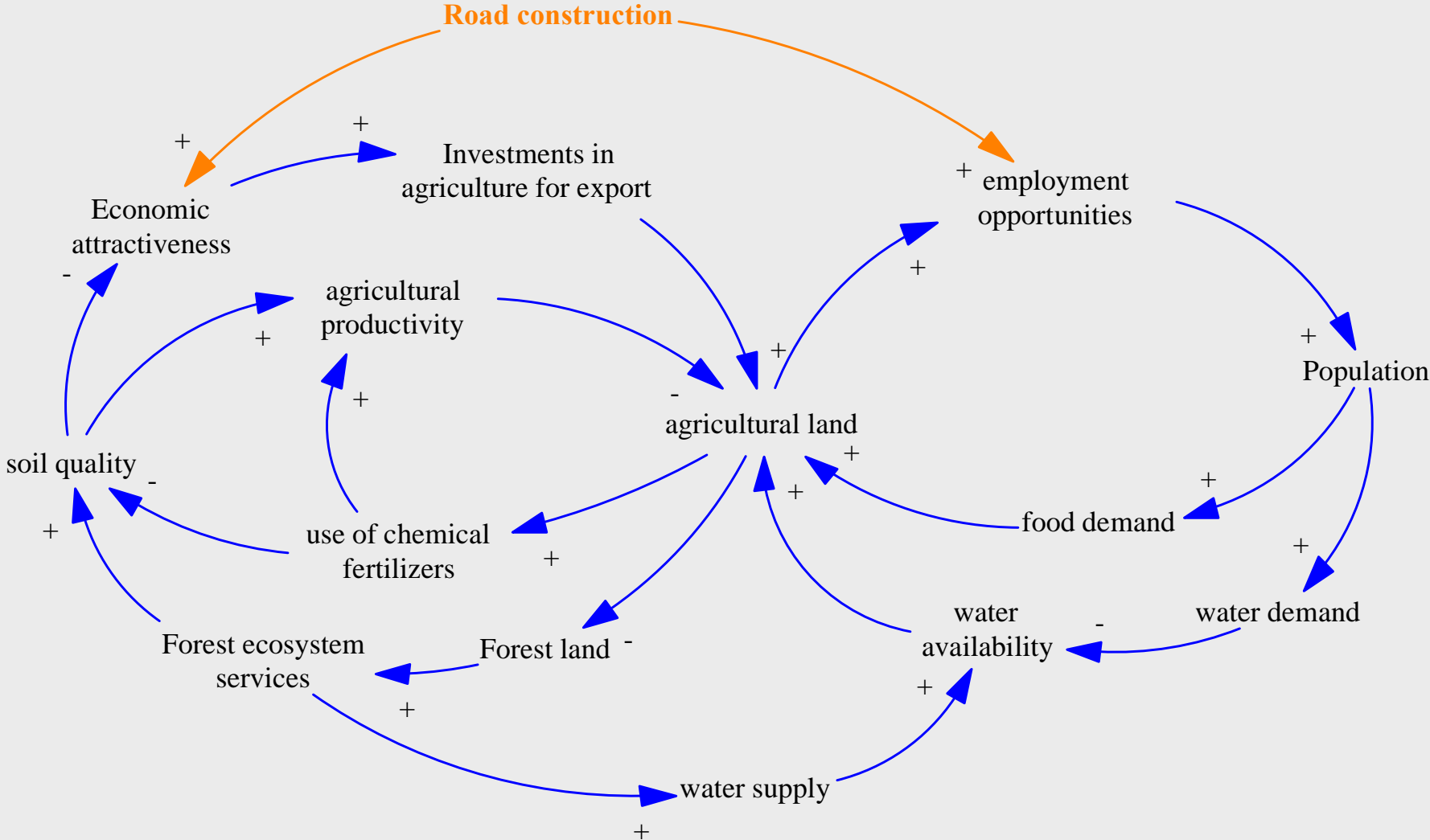
System mapping for the 'Road to Dawei'



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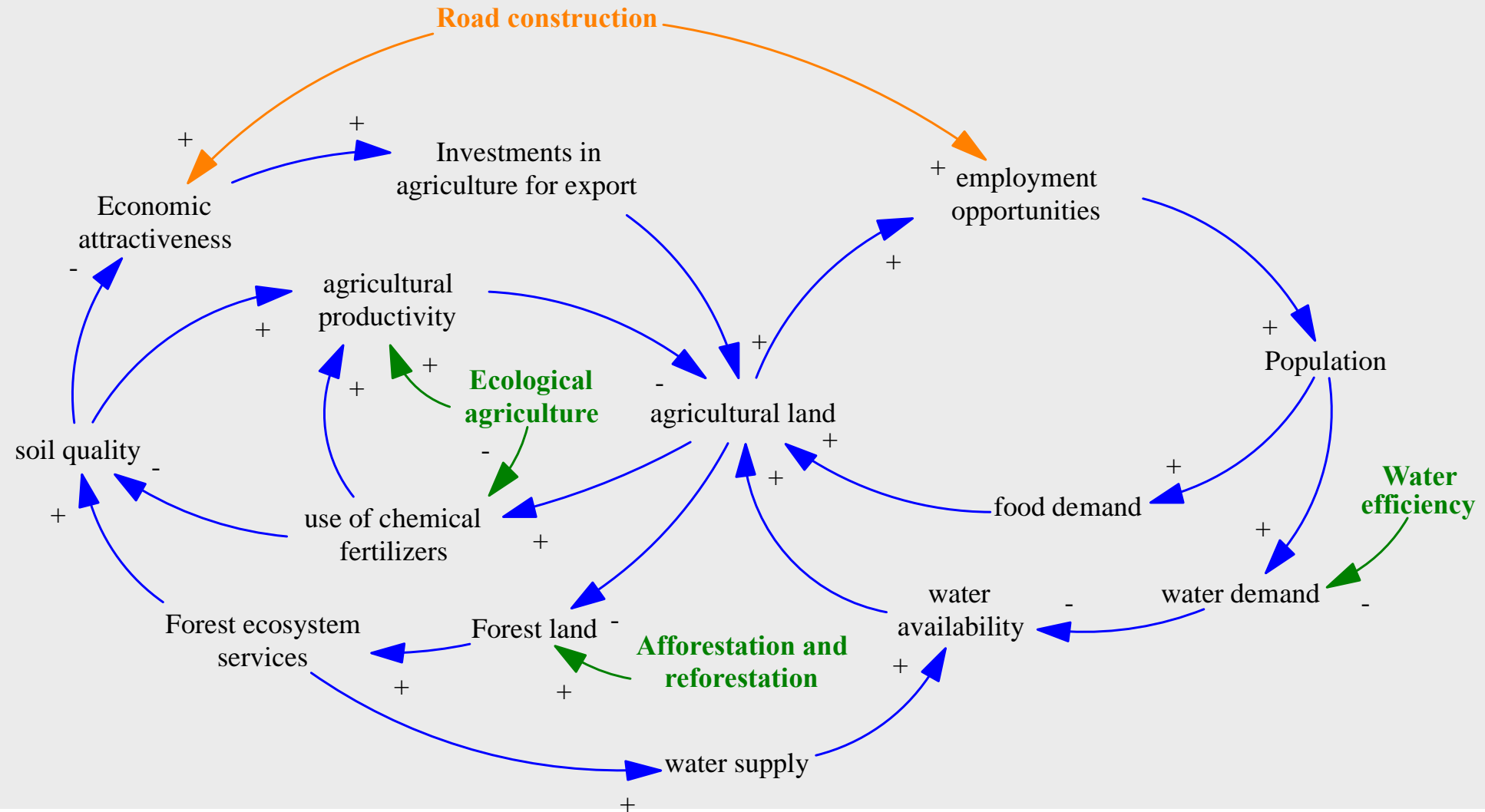


Advice 4

- Start from 1 variable, add the others one by one
- Identify and add causal relations (blue arrow) and add polarity to the arrows (+ or -)
- Identify and discuss feedback loops (circular relations)
- Add, and analyze, policy interventions



System mapping for the 'Road to Dawei'





Overview of Causal Loop Diagrams: tips

- Causal links must have unambiguous polarity. If you are in doubt, add two separate arrows.
- Apparently ambiguous polarities usually indicate the presence of multiple causal pathways that should be represented separately.
 - Price ----> Revenue??
 - Price ----> Revenue ----> Sales??



Overview of Causal Loop Diagrams: tips

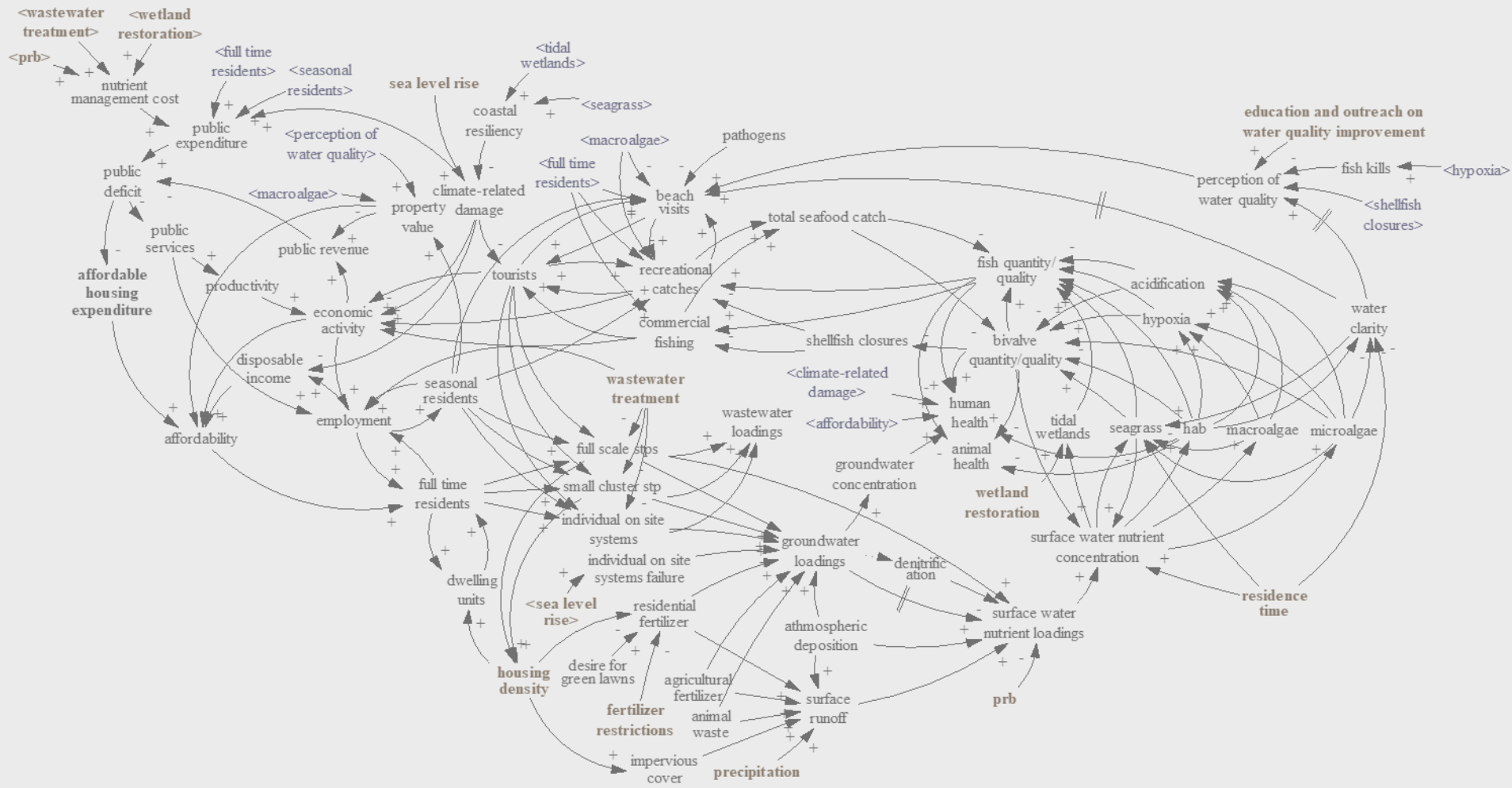
- Remember to name your loops to increase clarity and provide memorable labels for important feedbacks
- Variable names should be nouns or nouns phrases
 - Cost rise ----> Price Rise (NO)
 - Cost ----> Price (YES)
- Chose variables whose normal sense of direction is positive.
 - Cost ----> Losses (no)
 - Cost ----> Profit (yes)



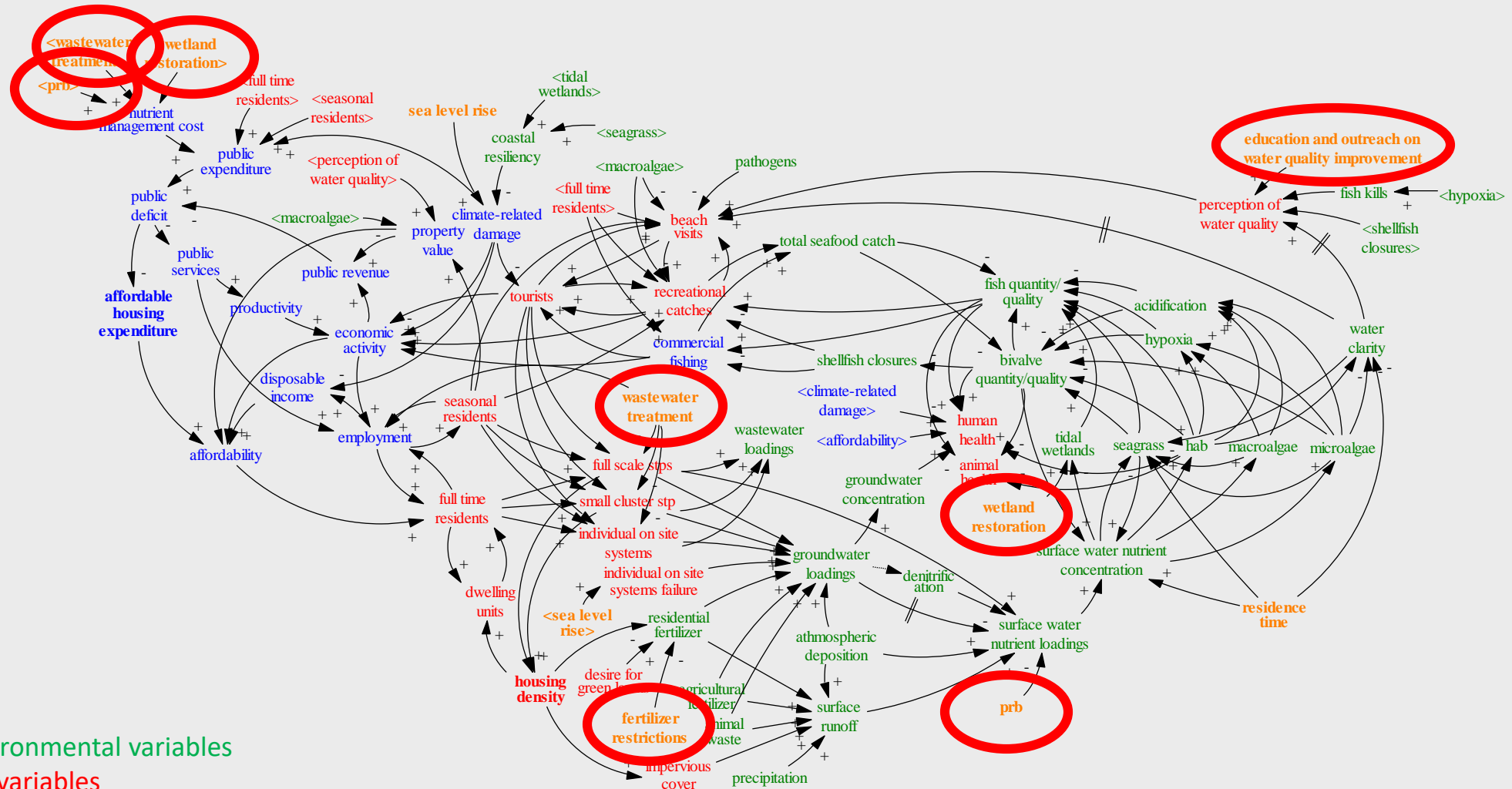
Overview of Causal Loop Diagrams: tips

- Use curved lines for feedbacks (to better visualize feedback loops)
- Make important loops follow circular or oval paths
- Organize your diagrams to minimize crossed lines
- Iterate and re-draw your diagram many times to find the best layout.

Why emphasize the CLD? - Structure



Why emphasize the CLD? - Actions



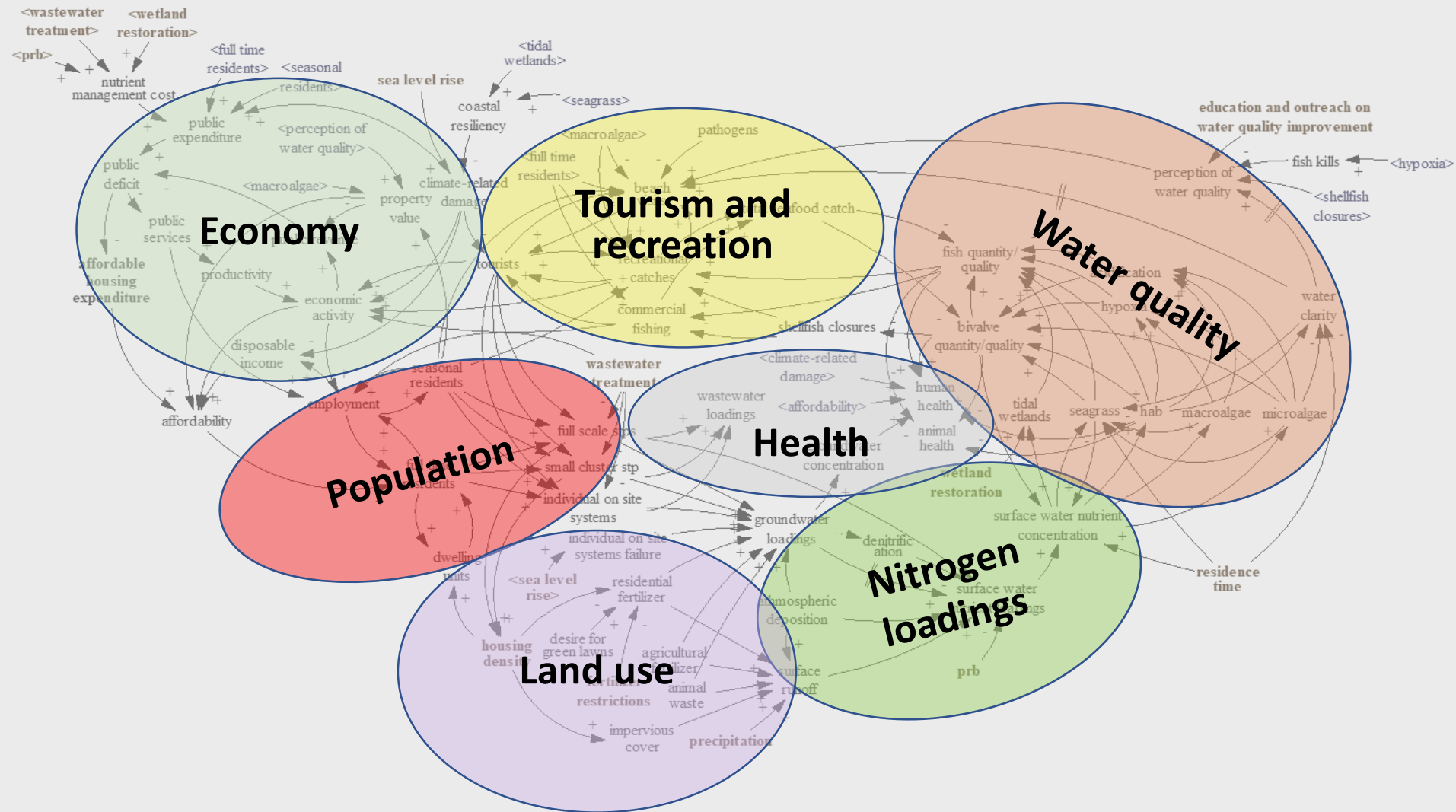
Green: environmental variables

Red: social variables

Blue: economic variables

Orange: external factors (e.g. climate trends and policy)

Why emphasize the CLD? - Domains





Data requirements (1)

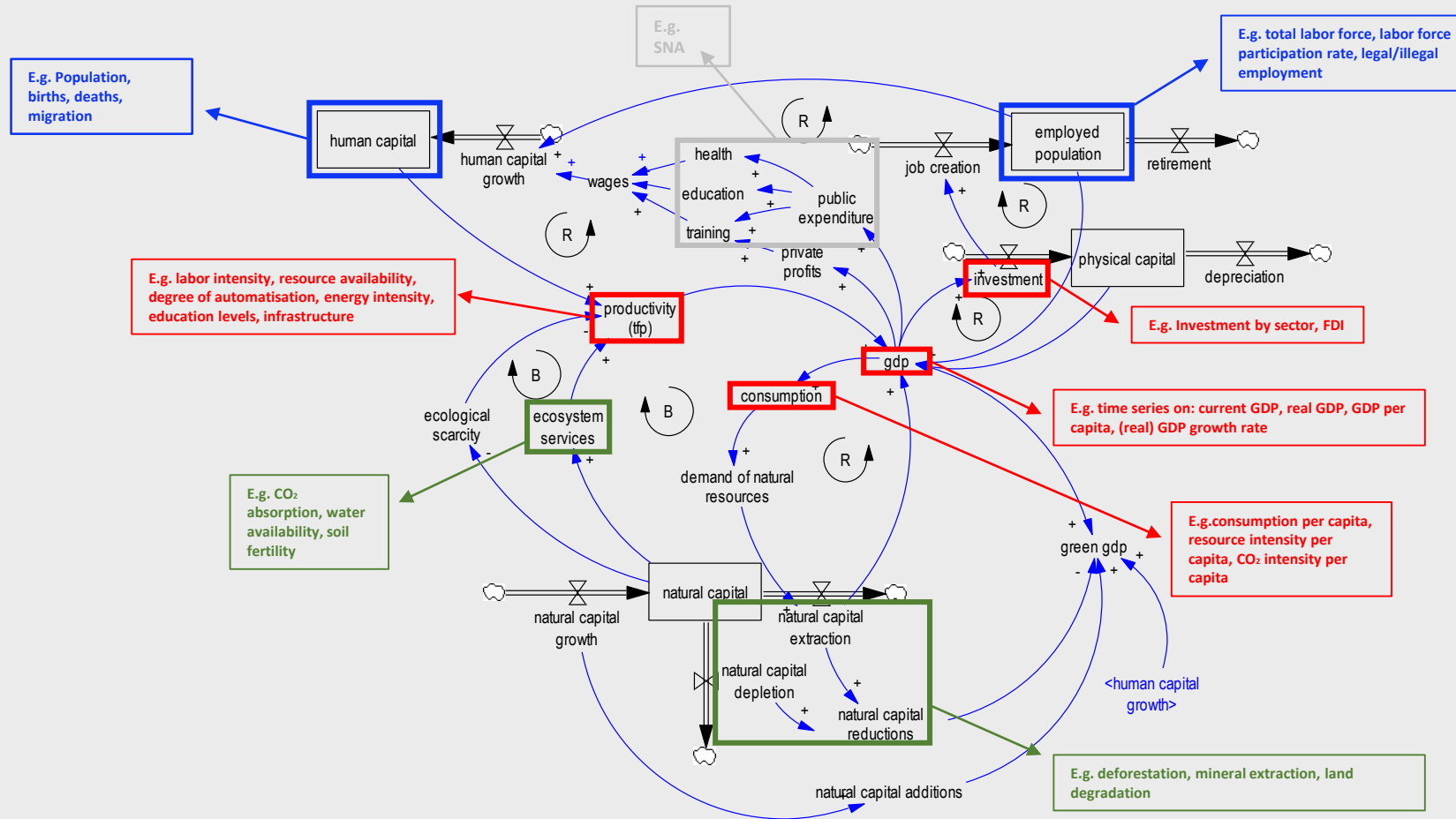
- The availability of data on historical and current trends shapes the quality of the analysis' results
 - Data on historical developments on national and sectoral level helps to understand the performance of the system
 - E.g.: GDP by sector, labour intensity, land use, population, agriculture, etc.
 - Data on current and historical trends will be used to project macroeconomic (and sectoral) performance into the future
- Information on key indicators can provide early warning systems for potential policy side effects



Data requirements (2)

- Data requirements always depend on the local context and the scope of the analysis
- Typical data requirements concern the key drivers of change within the system
 - Population
 - E.g.: Time series of population, birth rate, death rate, migration
 - Macroeconomic performance
 - E.g.: GDP, GDP deflator, GDP by sector, labor intensity, investments by sector
 - National Accounts
 - E.g.: Operating budget, total investment, consumption, debt levels
 - Land Use and Land Cover (LULC)
 - E.g. LULC types, LULC time series, carbon factors

Data requirements - Illustration





Thank you!

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