

Challenges of Sustainability Assessment for Tourism Destinations

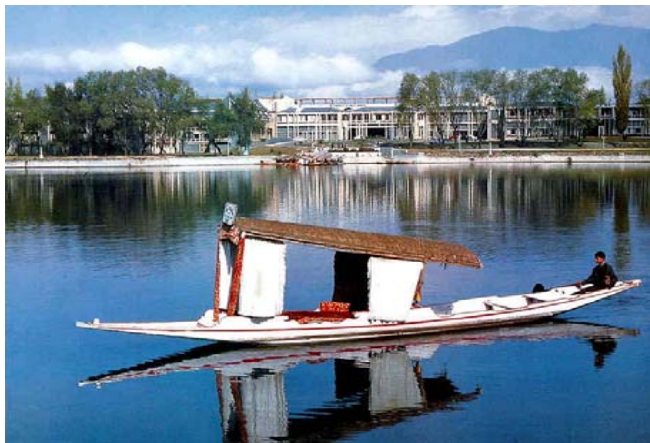
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Outline

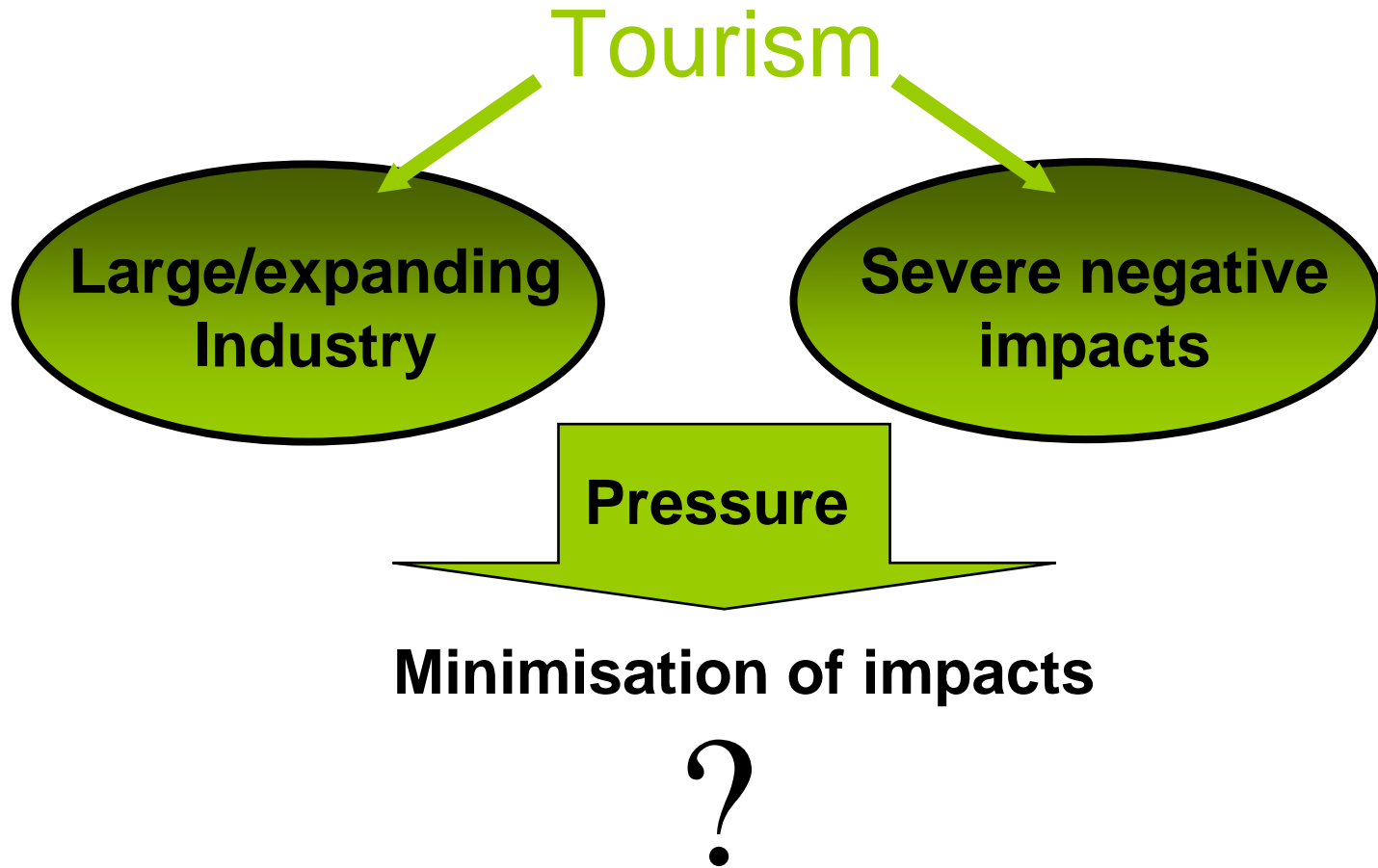
- Characteristics of tourism destinations
- Tourism destinations as complex systems
- Limitations of currently used tools
- Potentials of system dynamics modelling



Tourism impact

- Deterioration of water quality
- Disappearance of natural wetlands
- Collapse of local waste management
- Loss of biodiversity
- Destruction of customs, traditions & social relations of indigenous communities
- Rapid economic decline of destination

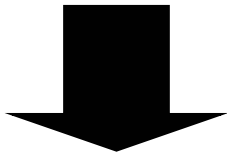




Effective decision-making tools for planners, regulators and developers

Characteristics

of tourism destinations



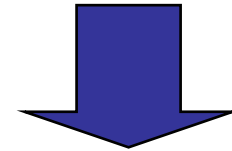
1) Located in ecologically fragile areas

2) Complex

3) Dynamic

Requirements

of an effective assessment tool



Site specific impacts

Cumulative impacts

Interconnections

Cause-effect relationships

Feedback loops

Lag times / Delays

Assessment Tools

- Sustainability Indicators (SI)
- Life Cycle Assessment (LCA)
- Environmental Auditing (EA)
- Ecological Footprinting (EF)
- Multi-criteria Analysis (MCA)
- Environmental Impact Assessment (EIA)
- System Dynamics Modelling (SDM)

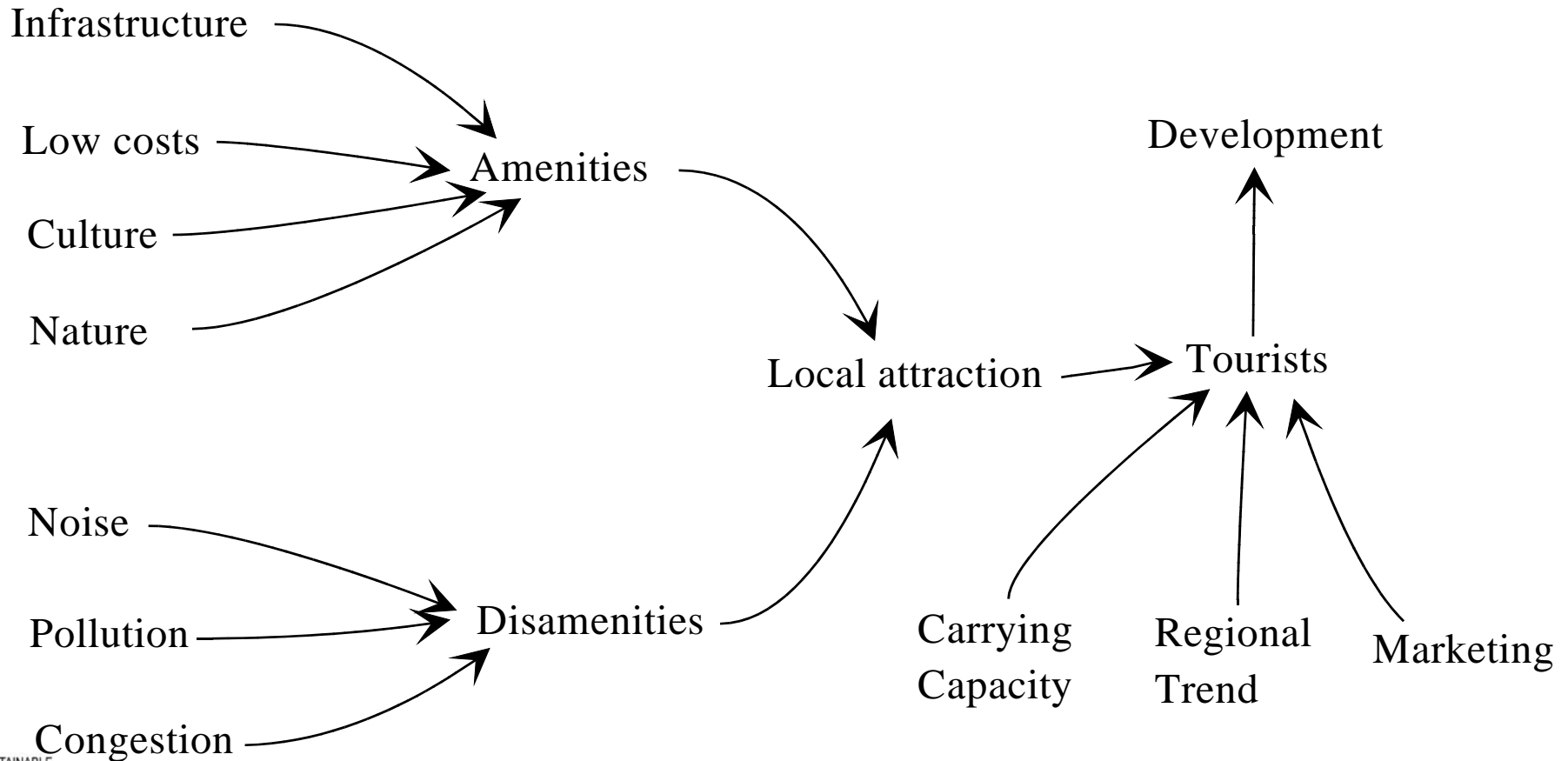


Assessment tool review

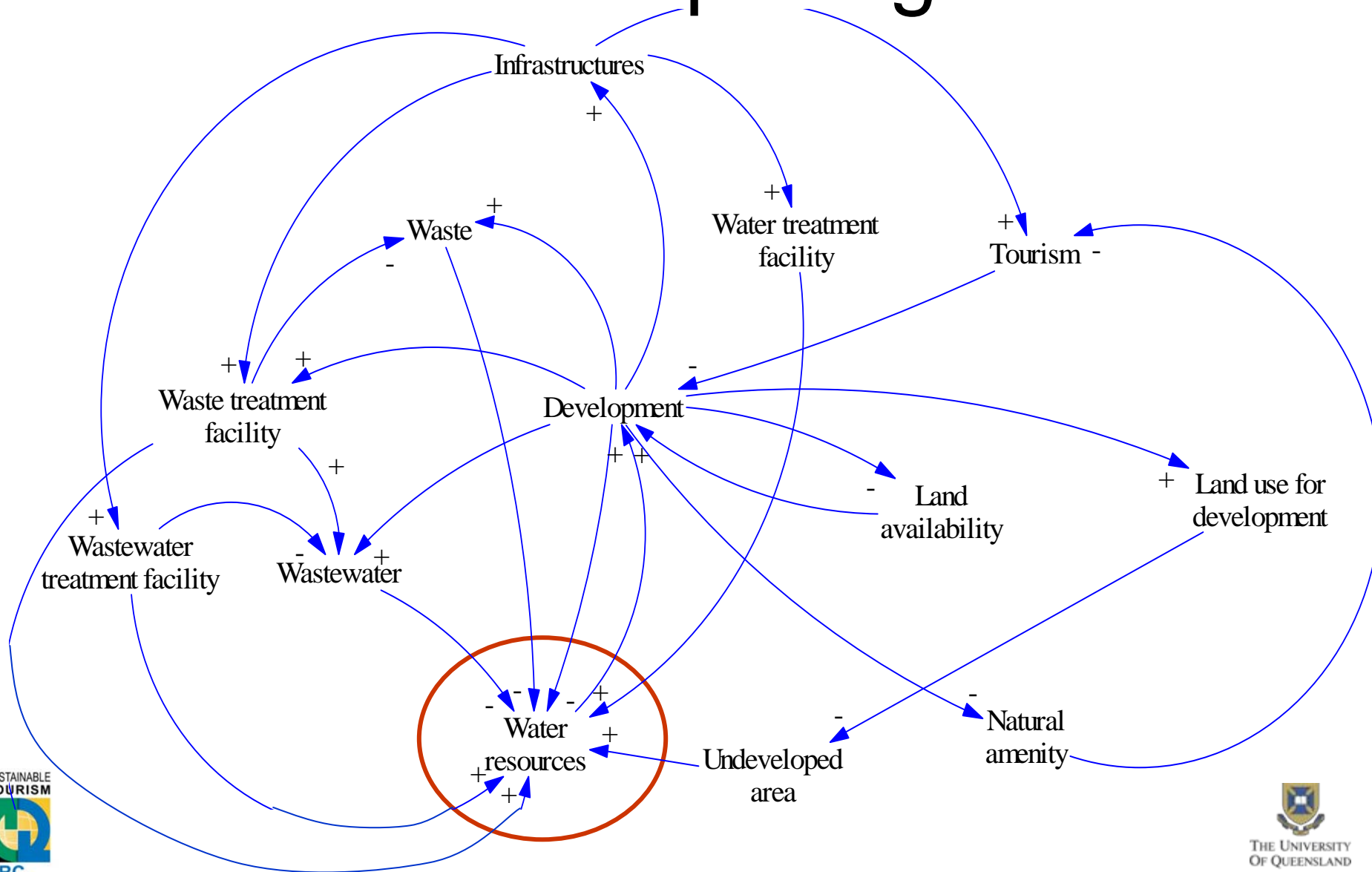


Effects assessed	SI	LCA	EA	EF	MCA	EIA	SDM
Site-specific impacts	*	*	***	-	***	***	***
Cumulative imp.	***	**	-	**	**	*	***
Interconnections cause-effect	*	-	*	-	*	*	***
Feedback loops	-	-	-	-	-	-	***
Time delays	-	-	-	-	-	*	***

Cause-effect relationships



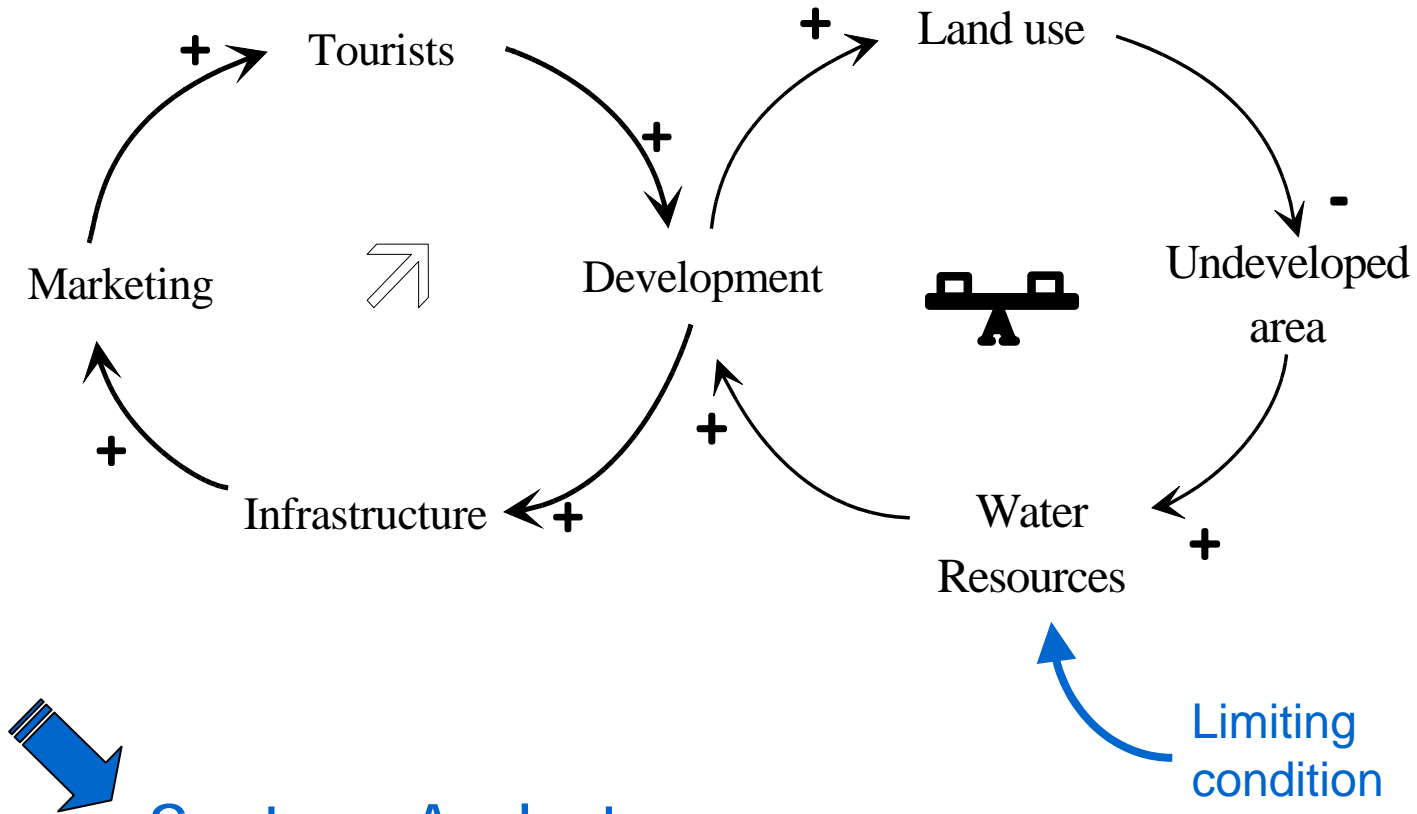
Causal Loop Diagram



Feedback loops

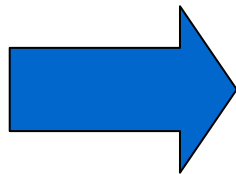
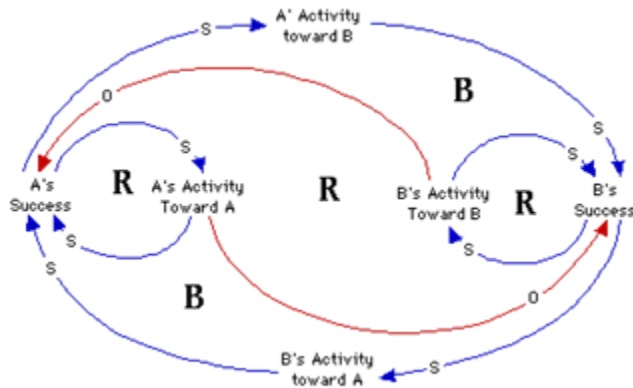
Reinforcing

Balancing



System Archetypes

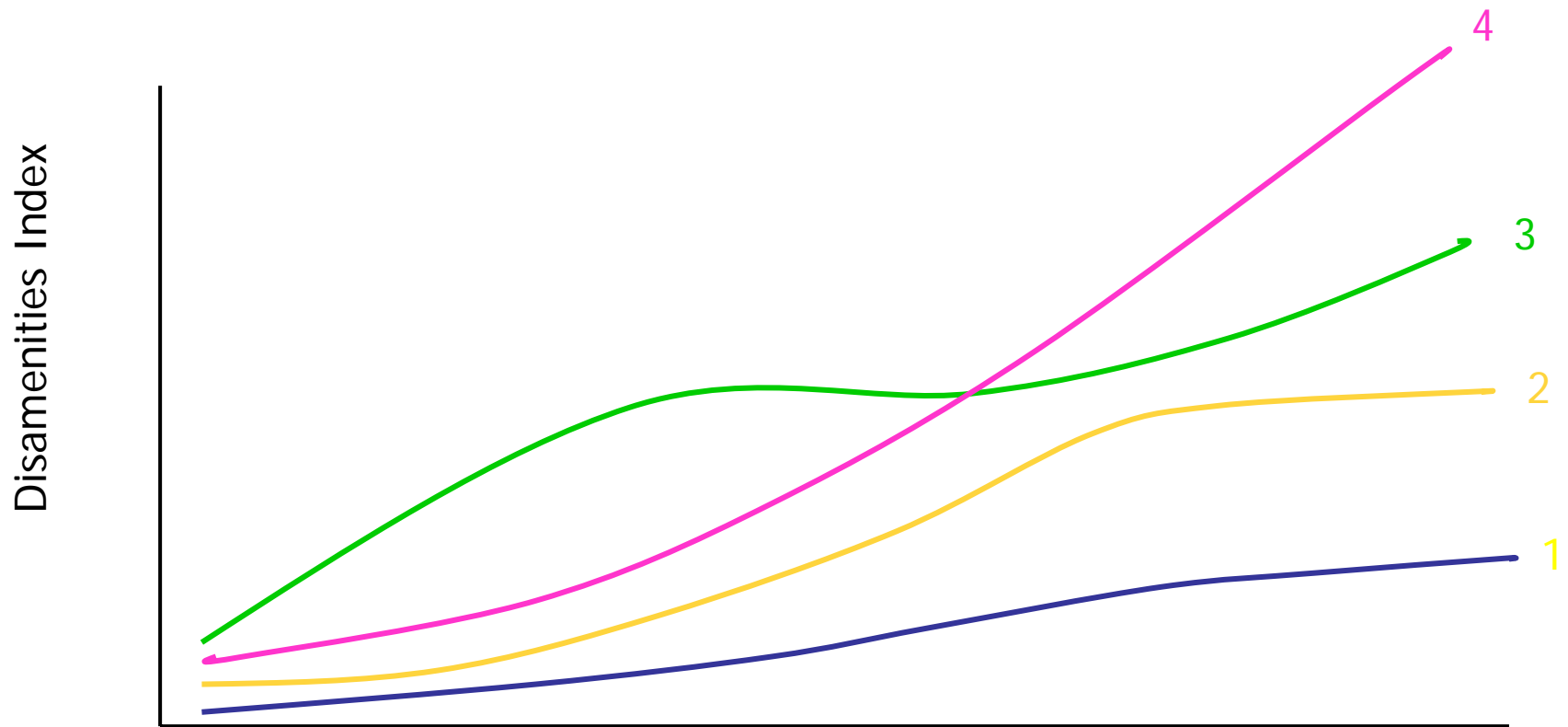
Looking at system structures



Improved
Understanding

- The big picture
- Behaviour patterns
- Counterintuitive systems
- Quick fixes that fail
- Victims or cause
- Multiple causality
- Time and space

Quantitative Simulation Modelling



Development of Disamenities over time under scenarios 1 to 4

Challenges of System Dynamics

- 1) Continuous learning process
- 2) Acknowledging uncertainties
- 3) Leverage versus solution
- 4) Acknowledging messiness
- 5) Importance of qualitative variables



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and

