ORGANIZING THE IMPLEMENTATION OF THE TARGETS OF THE SDG SYSTEM
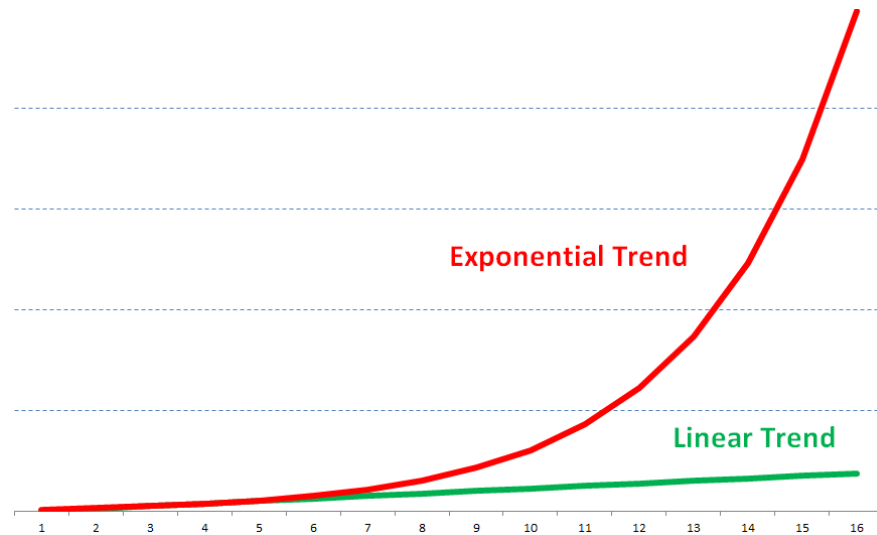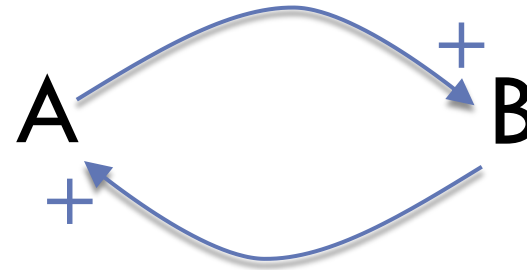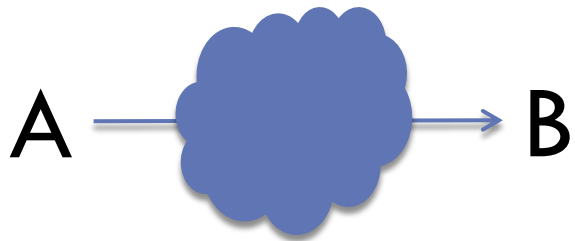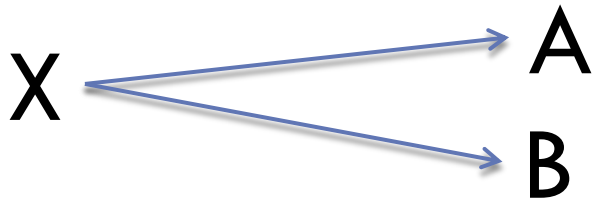
Janos Zlinszky & Bela Kuslits   2015

Cause and Effect

When two variables change together
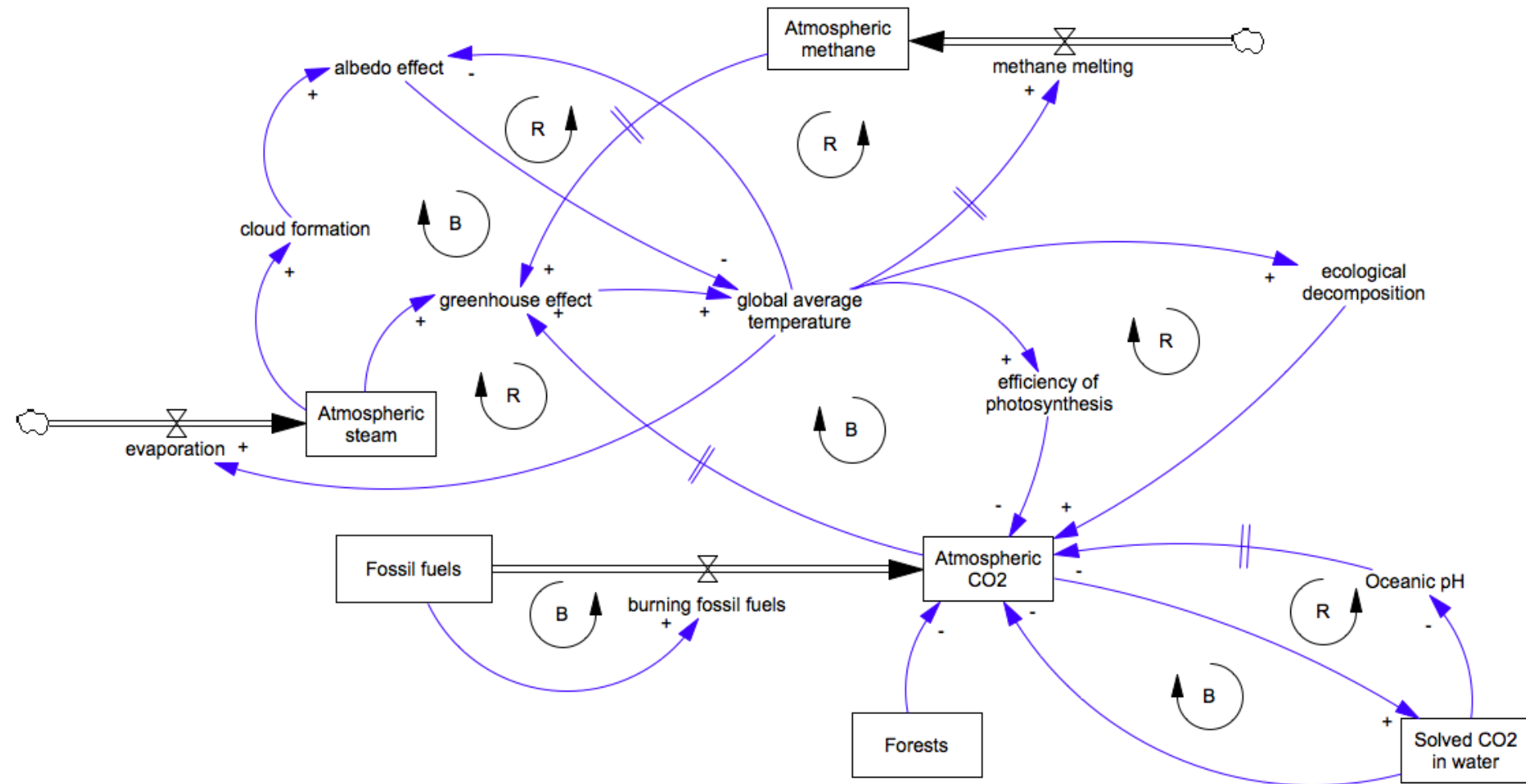
Correlation and Causality

Complex systems

Circular causality, nonlinear behaviour

Climate change as a complex system

Negative feedback loops

Foxes
−
Rabbits
+
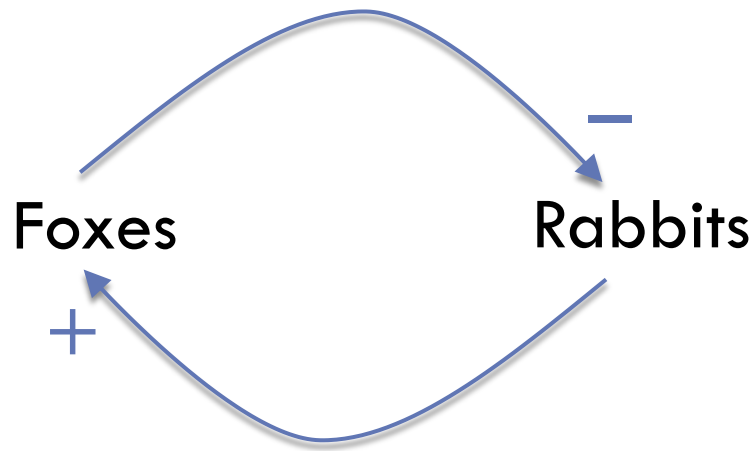
- Circular causality
- Stable system
- Active adaptation

Positive feedback loops

US army   Soviet army

$+$

$+$
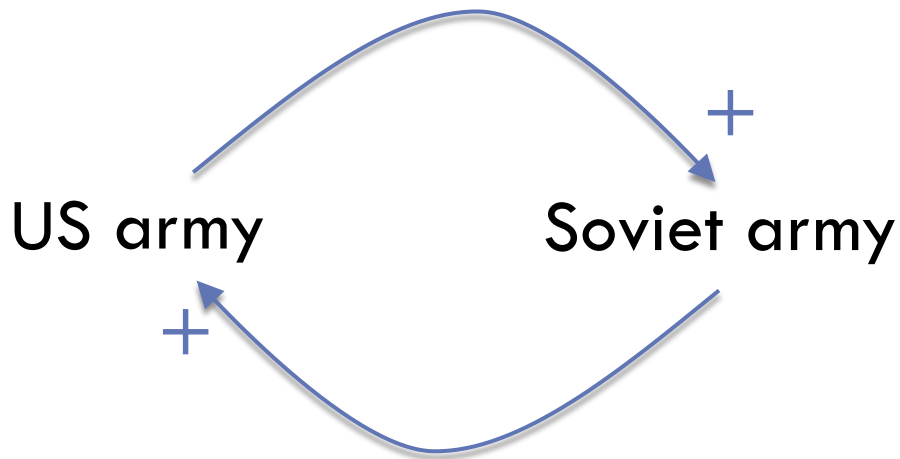
- Circular causality
- Unstable dynamics
- Weak adaptation
- Resource dependent: leads to collapse

Critical transitions

| Desired state | → → ← | Undesired state |
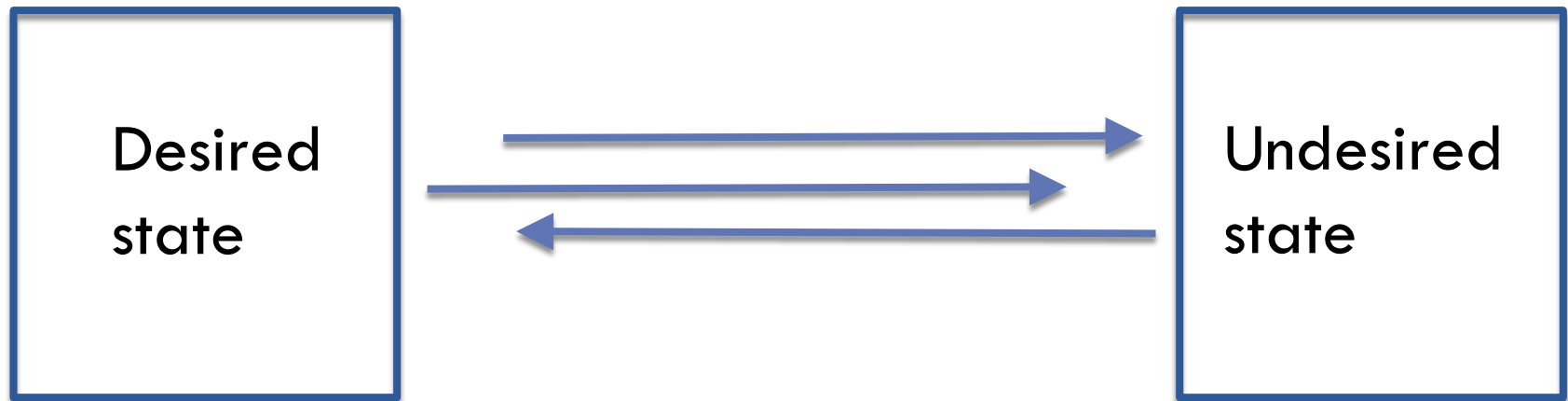
☐ To stabilize the system: improve negative loops

☐ To change the system: improve positive loops

Main principles

1. There is an objective hierarchy of problems
2. There is an objective hierarchy of variables
3. Some intervention points are extremely powerful

1. hierarchy of problems

Ultimate ends — **Well-being**
identity, fulfilment
community, spirituality

ethics/philosophy

Tools — **Social capital**
health, knowledge,
communication, goods

politics

Means — **Built, material capital**
work, factories,
infrastructure, raw materials

science

Ultimate means — **Ecological resources**
solar energy, biodiversity,
bio-geochemical processes

(ASEF 2014)
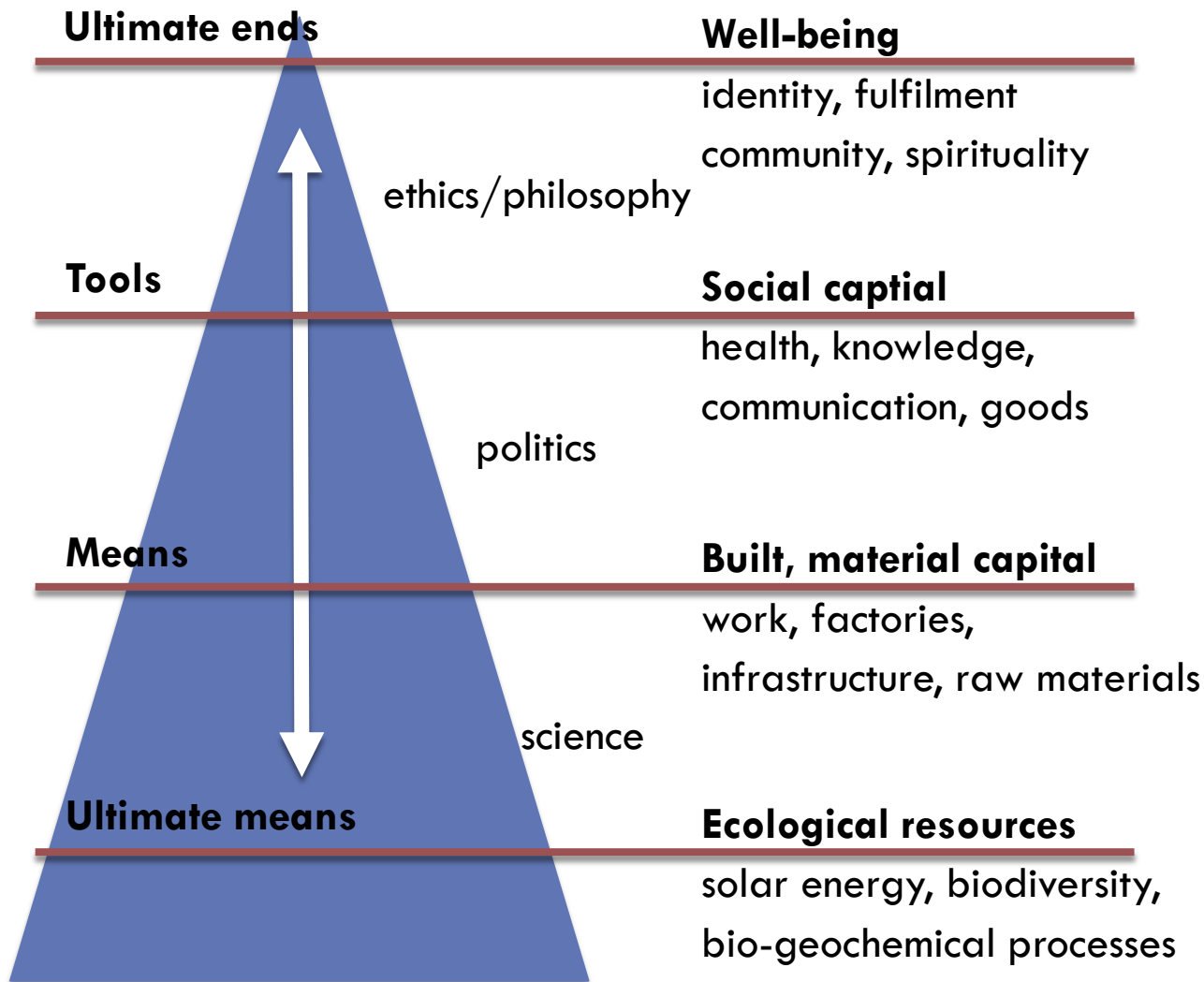
Places to intervene in a system

- Parameters, numbers
- Size of buffers
- Structure of material stocks and flows (eg infrastructure)
- Length of delays
- Strength of negative feedback loops
- Gain on positive feedback loops
- Information flows and access to them
- Rules (incentives, punishments)
- Power to change the system structure or add to it
- Goals of the system
- The mindset out of which the system arises
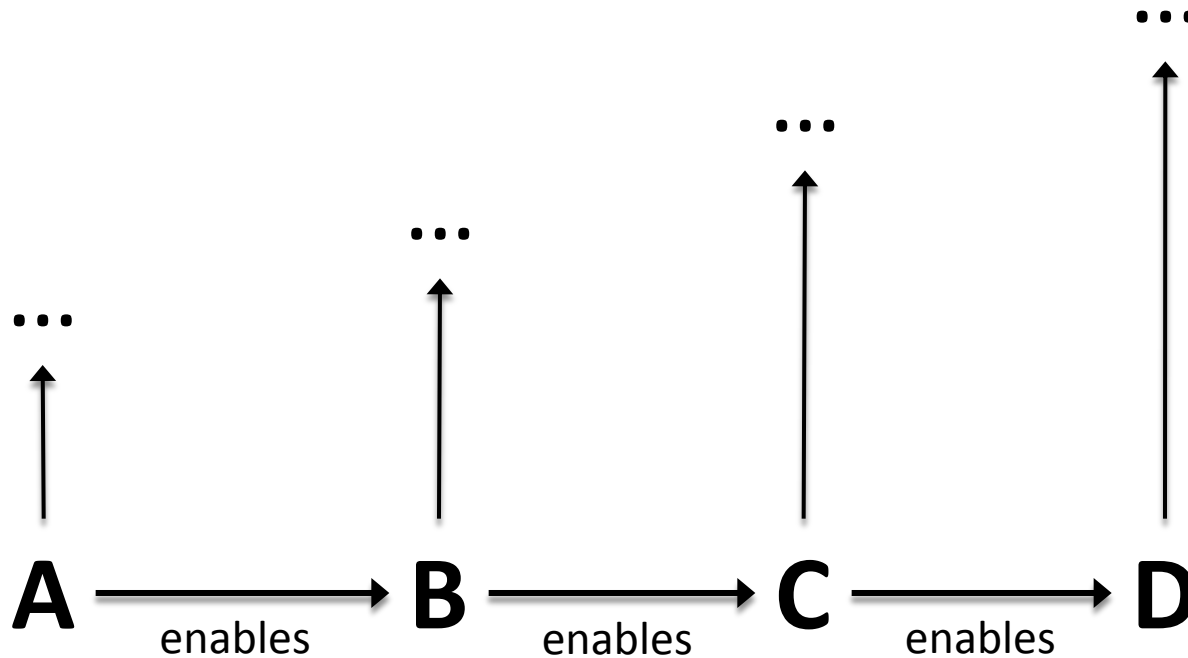- Power to transcend paradigms

(Meadows 1999)

Sustainable Development Goals

- We have many different goals
- None of the players has full control on the system
- Very different political/cultural structures
- Ecological/physical interconnectedness on a global level

- So how can we develop *effective* SDGs?

SDGk: so where do we start??

1. Redundancy: how many targets do we *REALLY* have?

2. Relevance: how far is my country from reaching this target? How much global influnece can we have on it?

3. Ranking in the system: which targets have highly efficient/effective positions in the system? (Enabling, avalanche, „virtuous cycle"?)

1. Enabling parameters

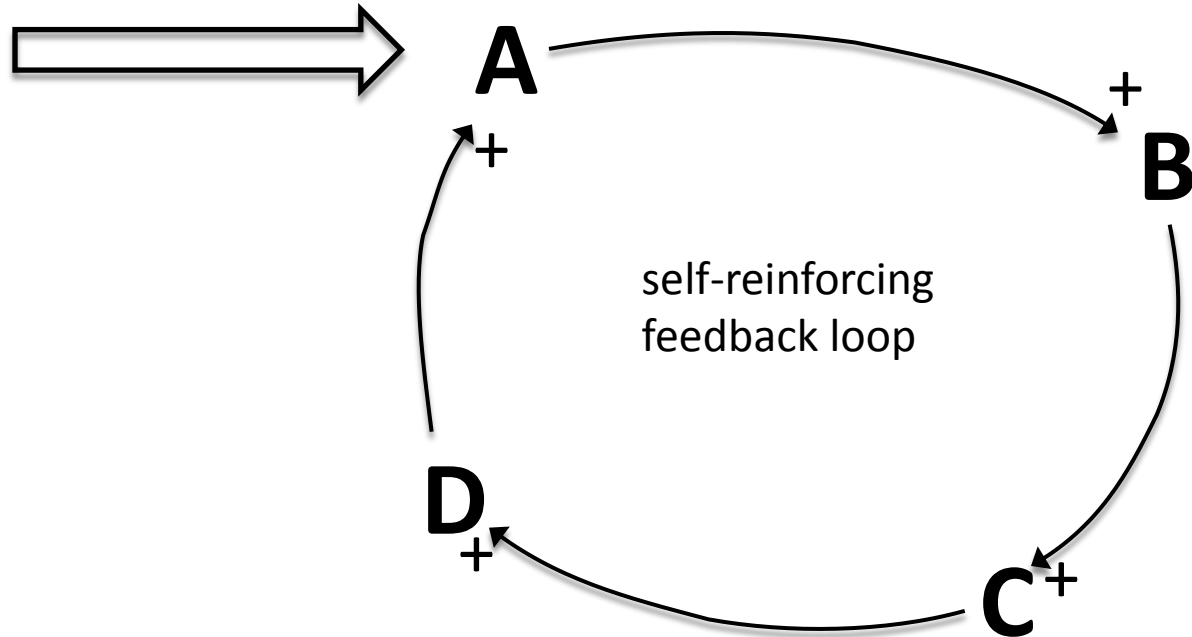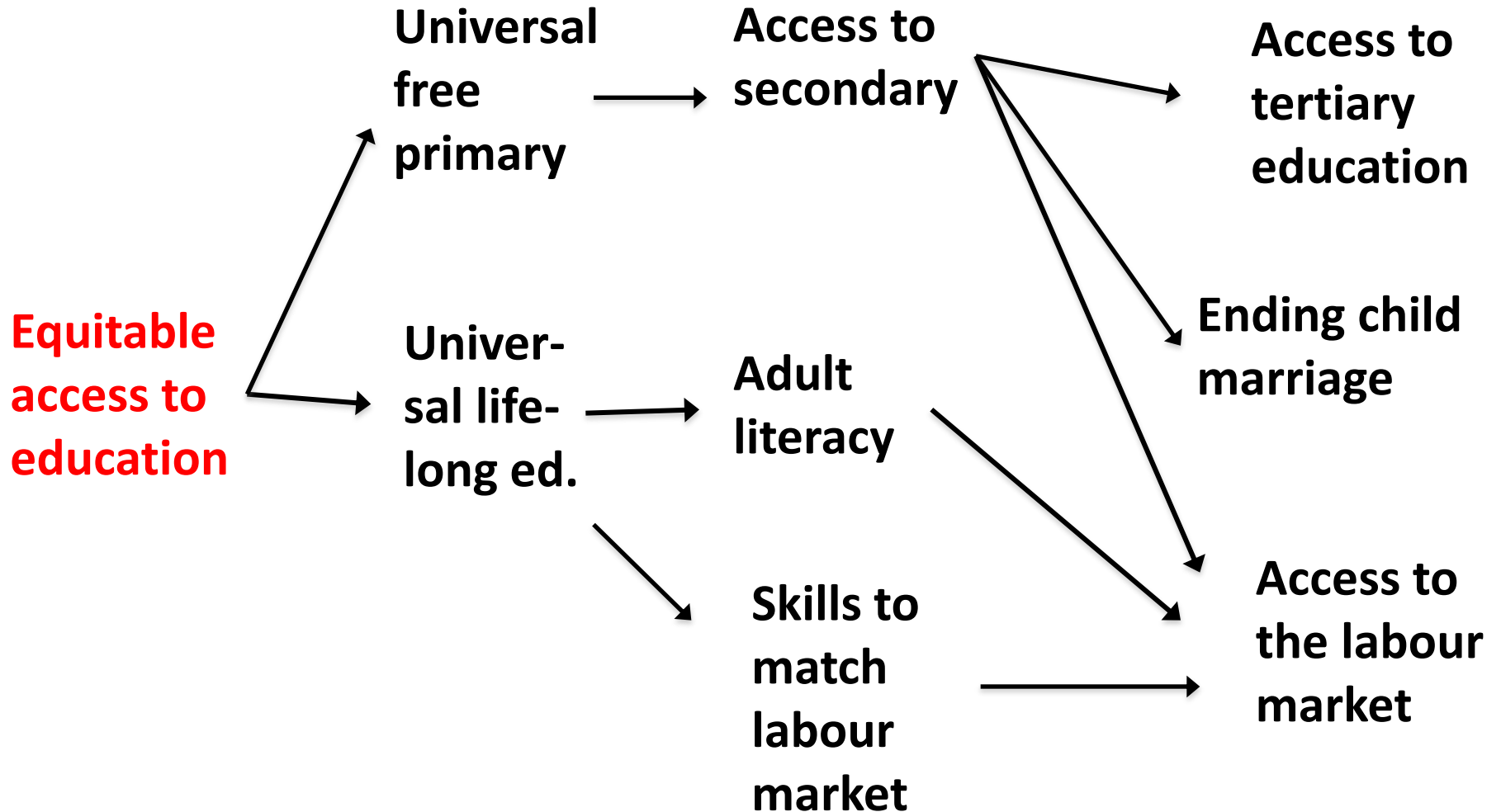**A** →_{enables} **B** →_{enables} **C** →_{enables} **D**

2. Multiple consequences

R ⟶ S ⟶ T

A — causes → R
A — causes → B ⟶ C ⟶ D
A — causes → X ⟶ Y ⟶ Z

3. Positive feedback loops

self-reinforcing
feedback loop
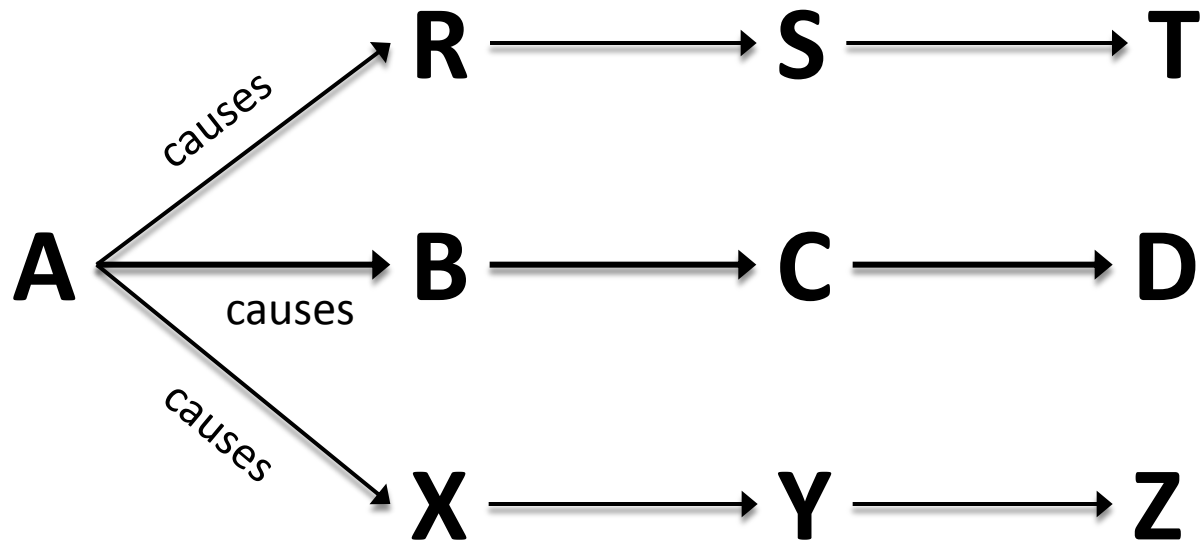
Avalanche example: education

Equitable access to education

Universal free primary → **Access to secondary**

Access to secondary → **Access to tertiary education**

Access to secondary → **Ending child marriage**

Access to secondary → **Access to the labour market**

Univer-sal life-long ed. → **Adult literacy**

Univer-sal life-long ed. → **Skills to match labour market**

Adult literacy → **Access to the labour market**

Skills to match labour market → **Access to the labour market**

Type 2 Example: Actions in „Energy"

Virtuous cycle example in „Health"

Enhance

Morbidity down

Health knowledge
and awareness up

Savings in
health budget

More funds for
health education

Virtuous cycle example in „Health"

Child and maternal deaths down

% Vulnerable people down

Affordability of medicines and vaccines improved

Morbidity down

Hours worked up

HEALTH COVERAGE

Tax revenues up

Public social expenses down

Available public funds up
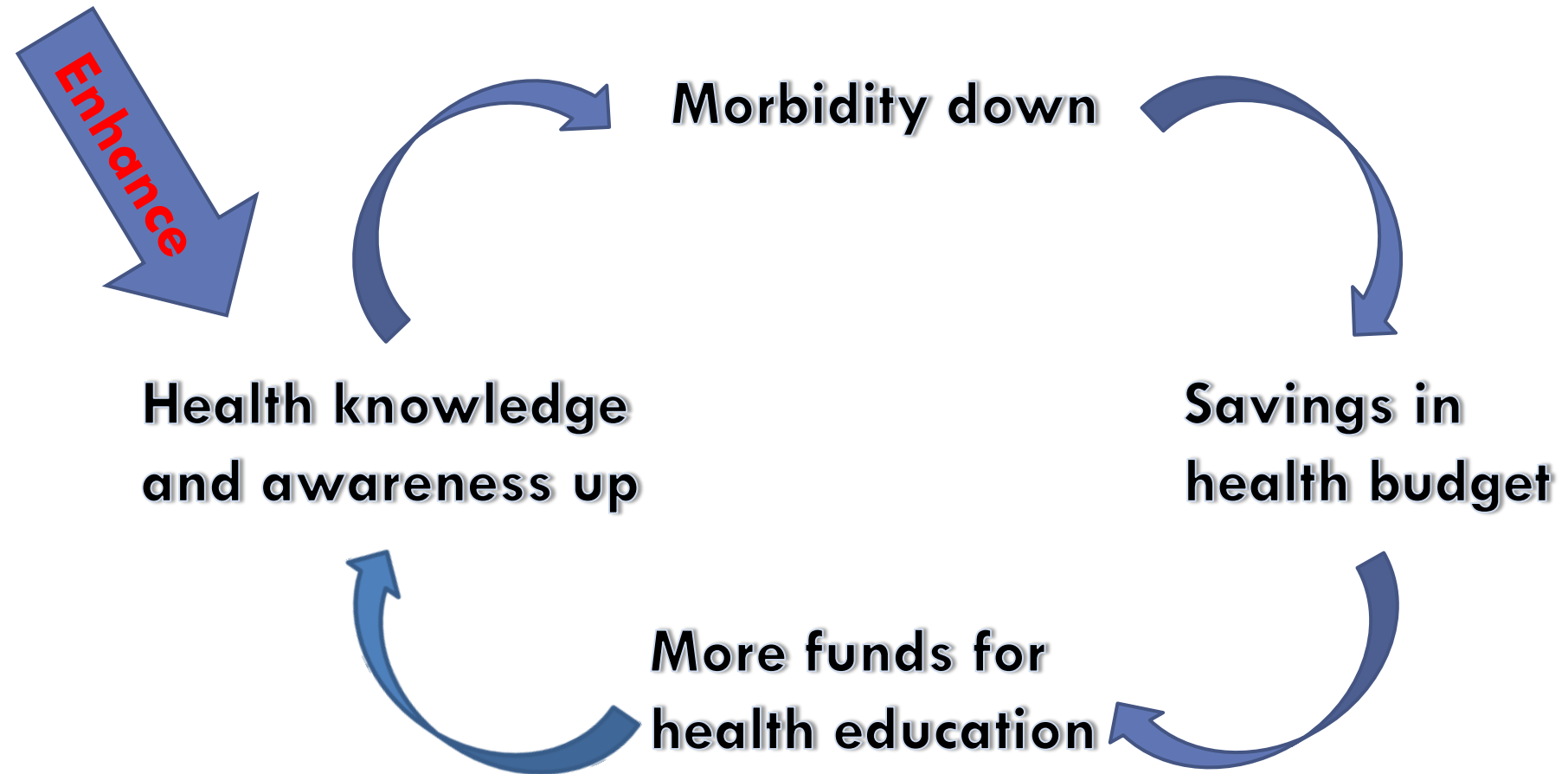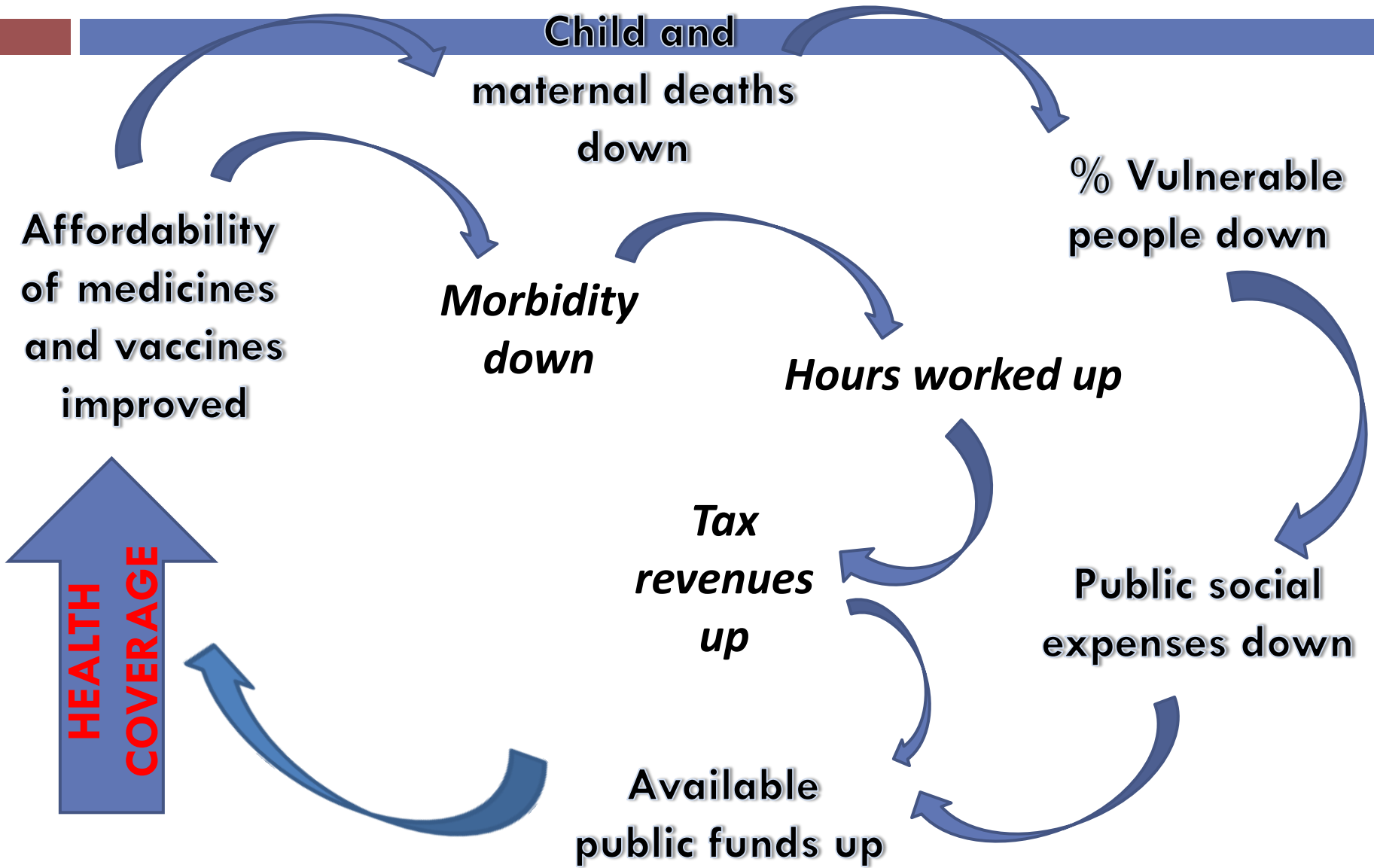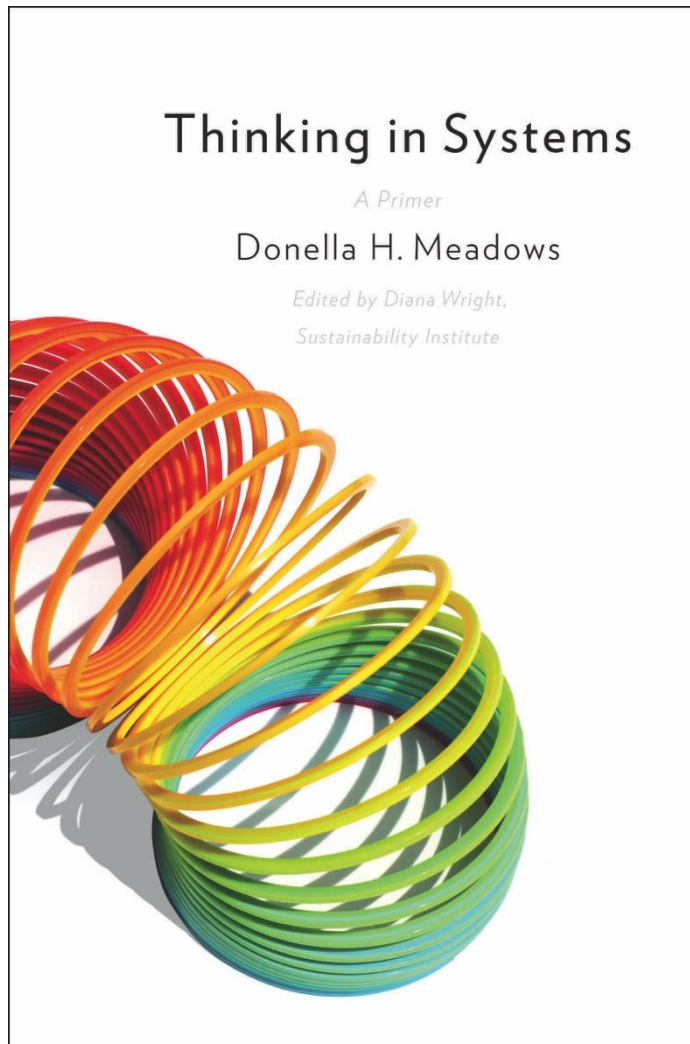
Climate change as a complex system

Task for the next two weeks:

1. Arrange (sub)goals in the problem hierarchy given!

2. Arrange (sub)goals to the point(s) of intervention they aim at!

3. Create a sequence of (sub)goals according to their relevance to your country!

4. Find enabling, avalanche, and „virtuous cycle"-type subsystems among the (sub)goals and their targets!

Thanks for your attention.

Recommended literature

Thinking in Systems
A Primer
Donella H. Meadows
Edited by Diana Wright,
Sustainability Institute

Donella Meadows:
- Thinking in Systems
- Leverage Points: places to intervene in a system