Stevens Point, April 26, 2014

Torbjörn Lahti

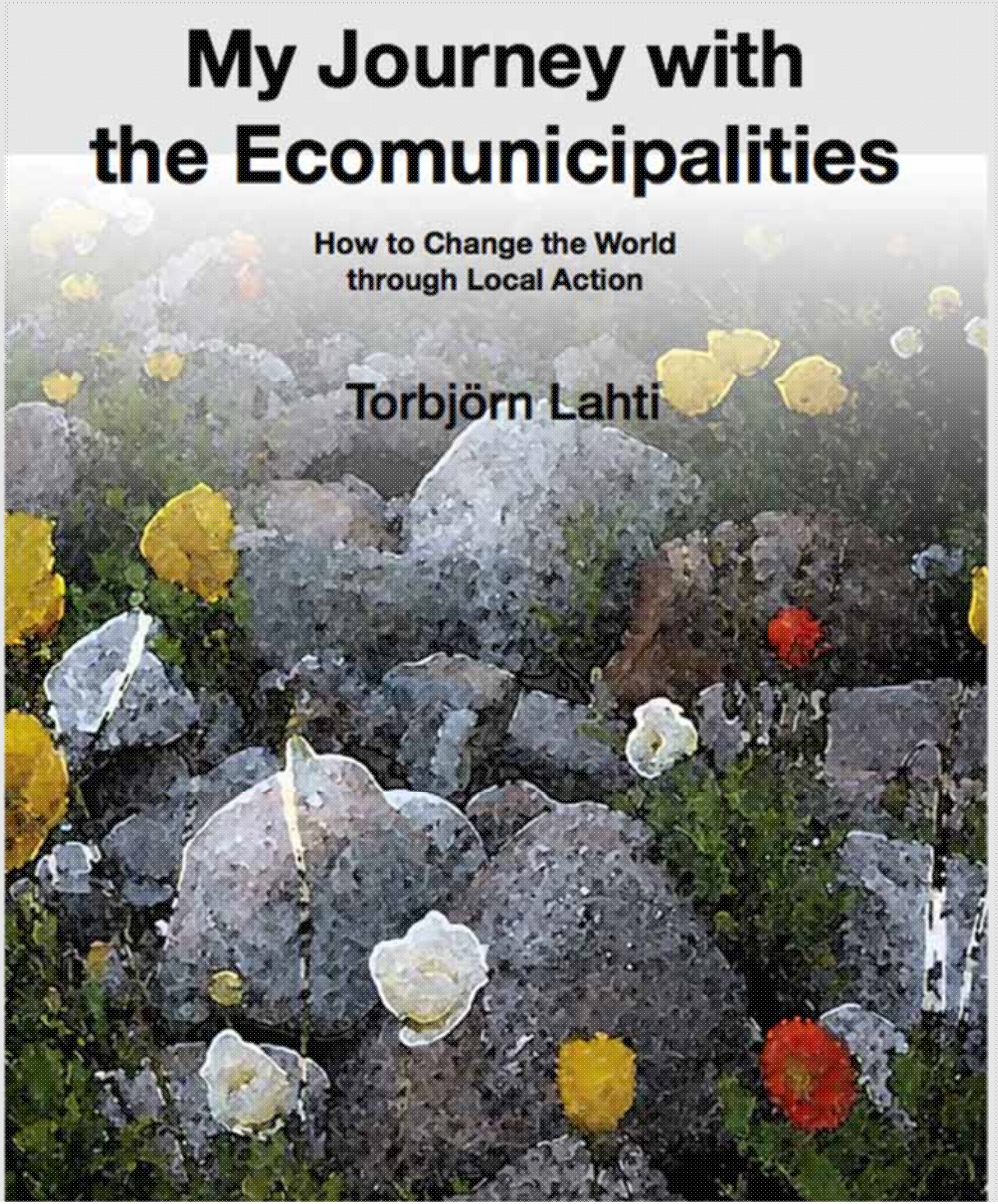
President
Sustainable Sweden Association
www.sustainablesweden.org

Institute for Eco-Municipality Education & Assistance, IEMEA
www.instituteforecomunicipalities.org

torbjorn@sustainablesweden.se

torbjorn.lahti@esam.se

Founder, share-owner,
Esam AB
www.esam.se

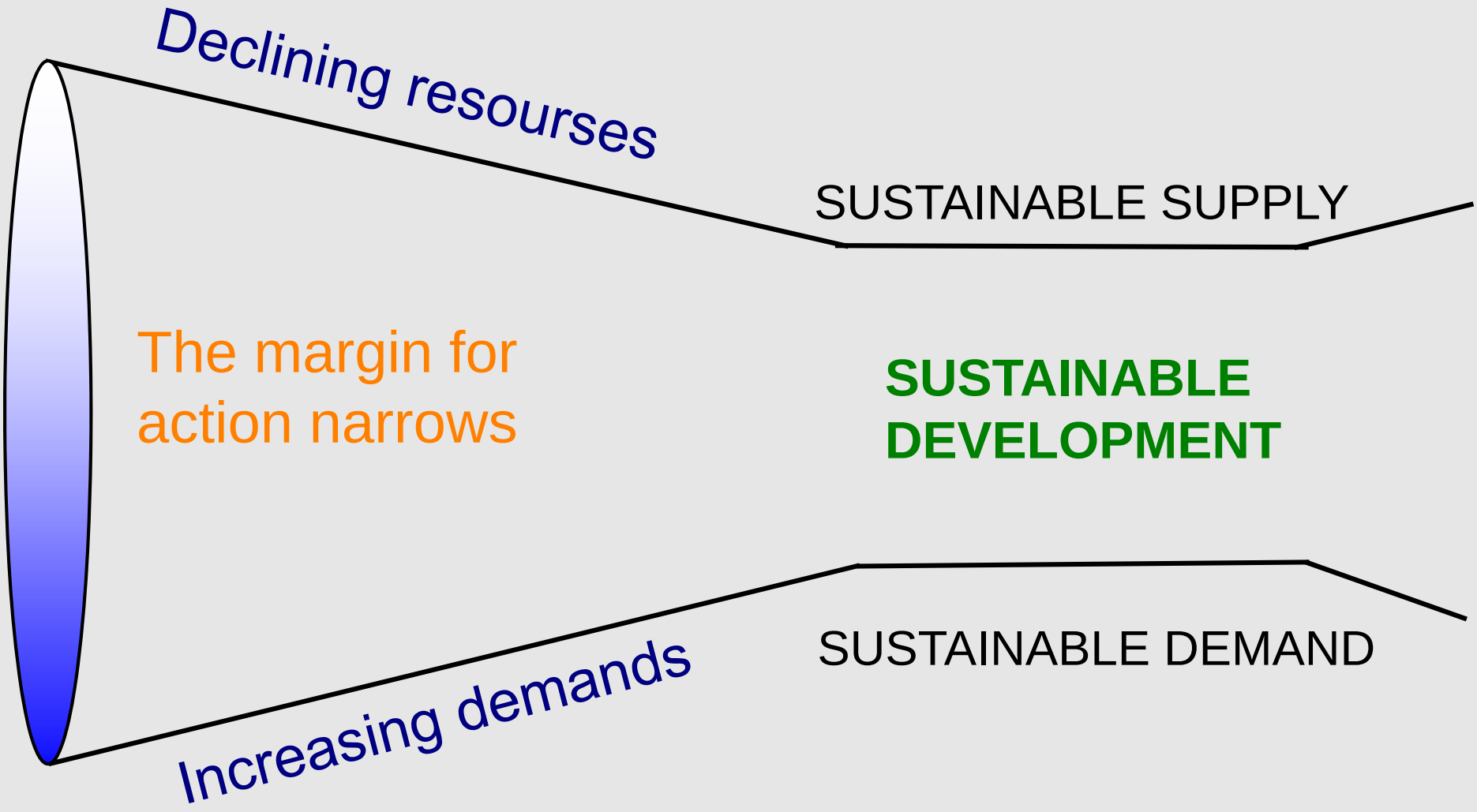

My Journey with
the Ecomunicipalities
How to Change the World
through Local Action
Torbjörn Lahti

Global Threats

- Global Financial Crisis
- Climate Change
- Peak oil
- Extinction of plants and animals
- Shortage of food and water
- Growth of population
- Increasing consumption
- Ephidemies
- Chemical disperse
- and so on.....


The world has become small
and limited.
We need a new economic
model that respect these
conditions!

The Funnel



The present → **The future**

The Industrial society

The Sustainable society

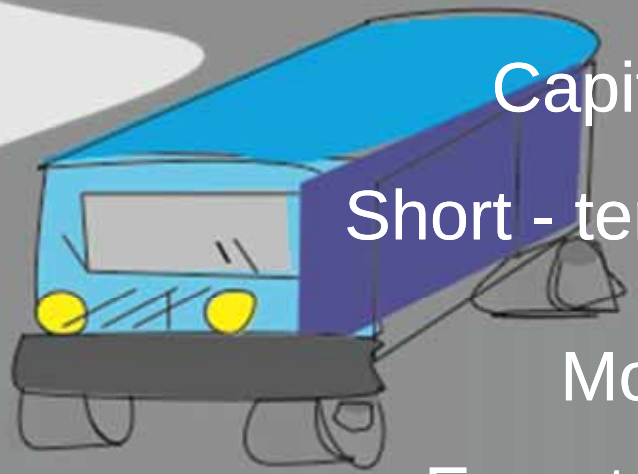
Production

Growth

Quantity

Materialism

Consumer society



Capital

Short - term

Money

Export

Fundamental needs

Sustainable development

Quality

Quality of life

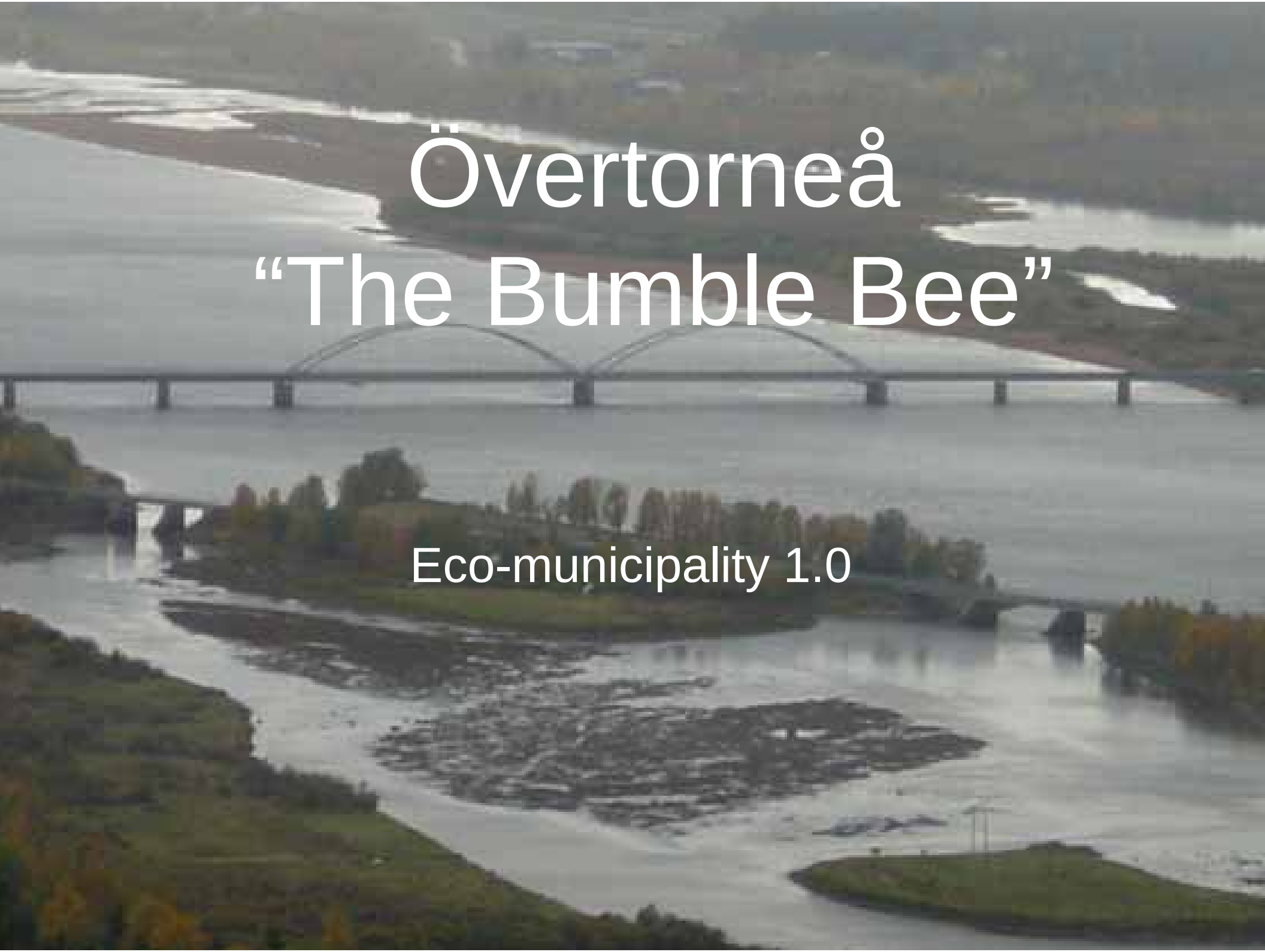
Caring society

Knowledge

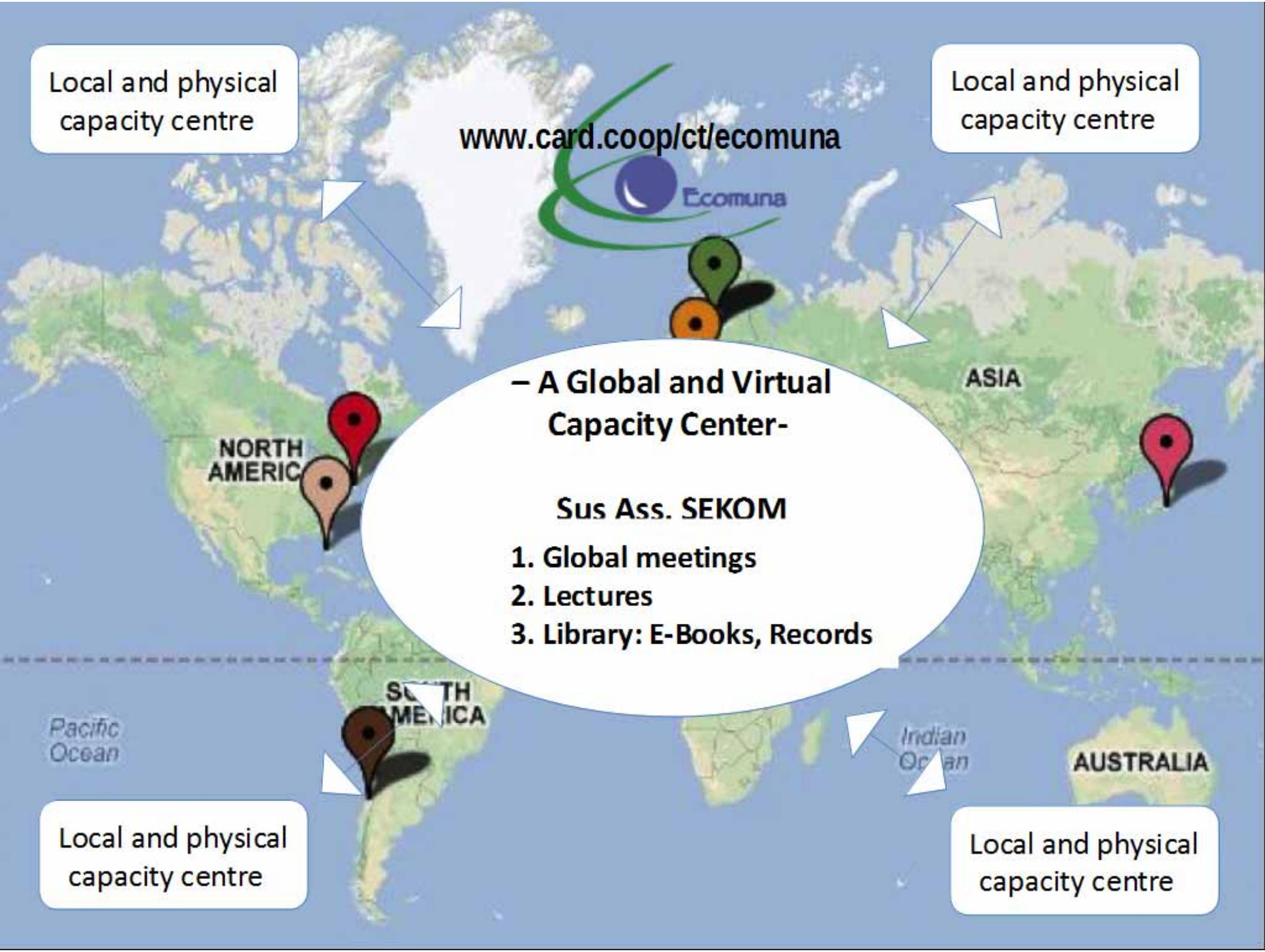
Long - term

Real resources

Self - sufficiency

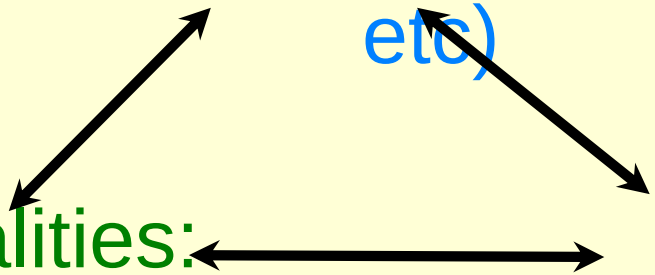

Övertorneå
“The Bumble Bee”
Eco-municipality 1.0

Eco-municipality initiatives


Local and physical capacity centre
www.card.coop/ct/ecomuna
Ecomuna
Local and physical capacity centre
– A Global and Virtual Capacity Center-
Sus Ass. SEKOM
1. Global meetings
2. Lectures
3. Library: E-Books, Records
NORTH AMERIC
ASIA
Pacific Ocean
Indian Oc an
AUSTRALIA
Local and physical capacity centre
Local and physical capacity centre

Three types of memberships:

Partner organizations:
(Capacity Centers, Coordinators, etc)



Eco-Municipalities:
(cities, towns, counties)

Global Change Agents:
Professionals, Fire Souls

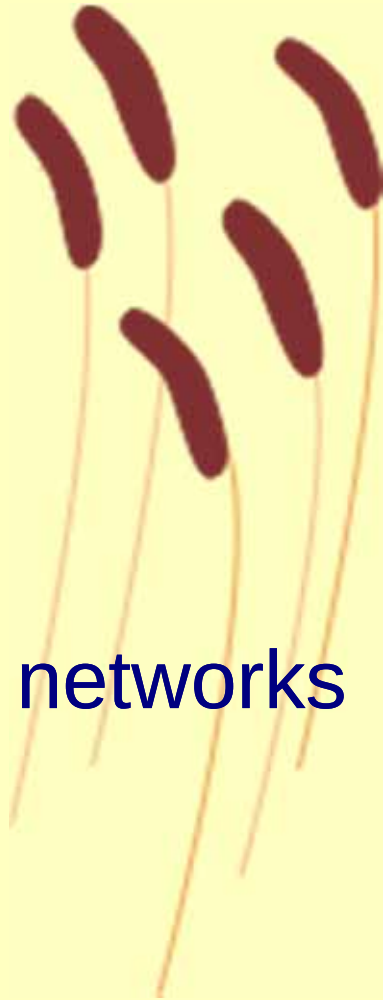
The Eco-Municipality Concept

- Oldest exicting network for sustainable development
- Based on a scientific concept
- Focus on Systemview
- Long-term perspective
- Back–casting
- Global perspective
- Democracy and fairness
- Common rules but local solutions

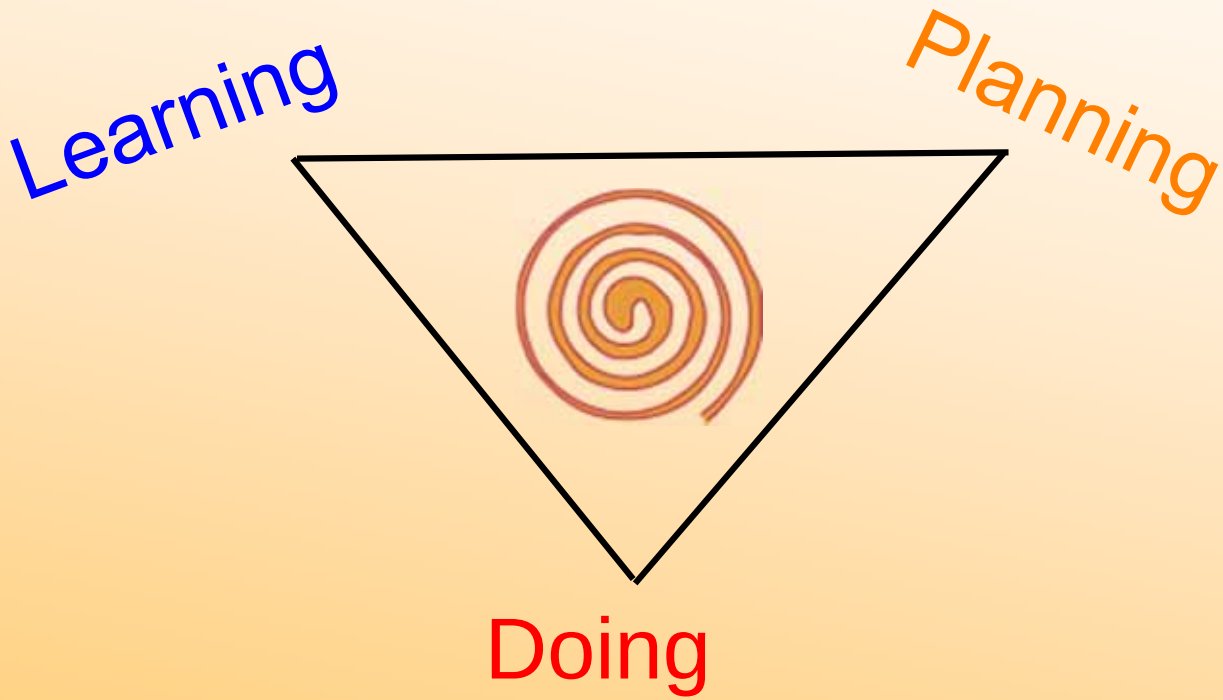
Eco-Municipality 5.0

CONTENTS:

- System view
- Visionary process – “back-casting”
- Democracy and participation
- Horizontal integrations – “building bridges”
- Vertical integrations – working at each level – networks
- Process Leadership and ongoing learning
- Building platforms



Key-components in a succesful process



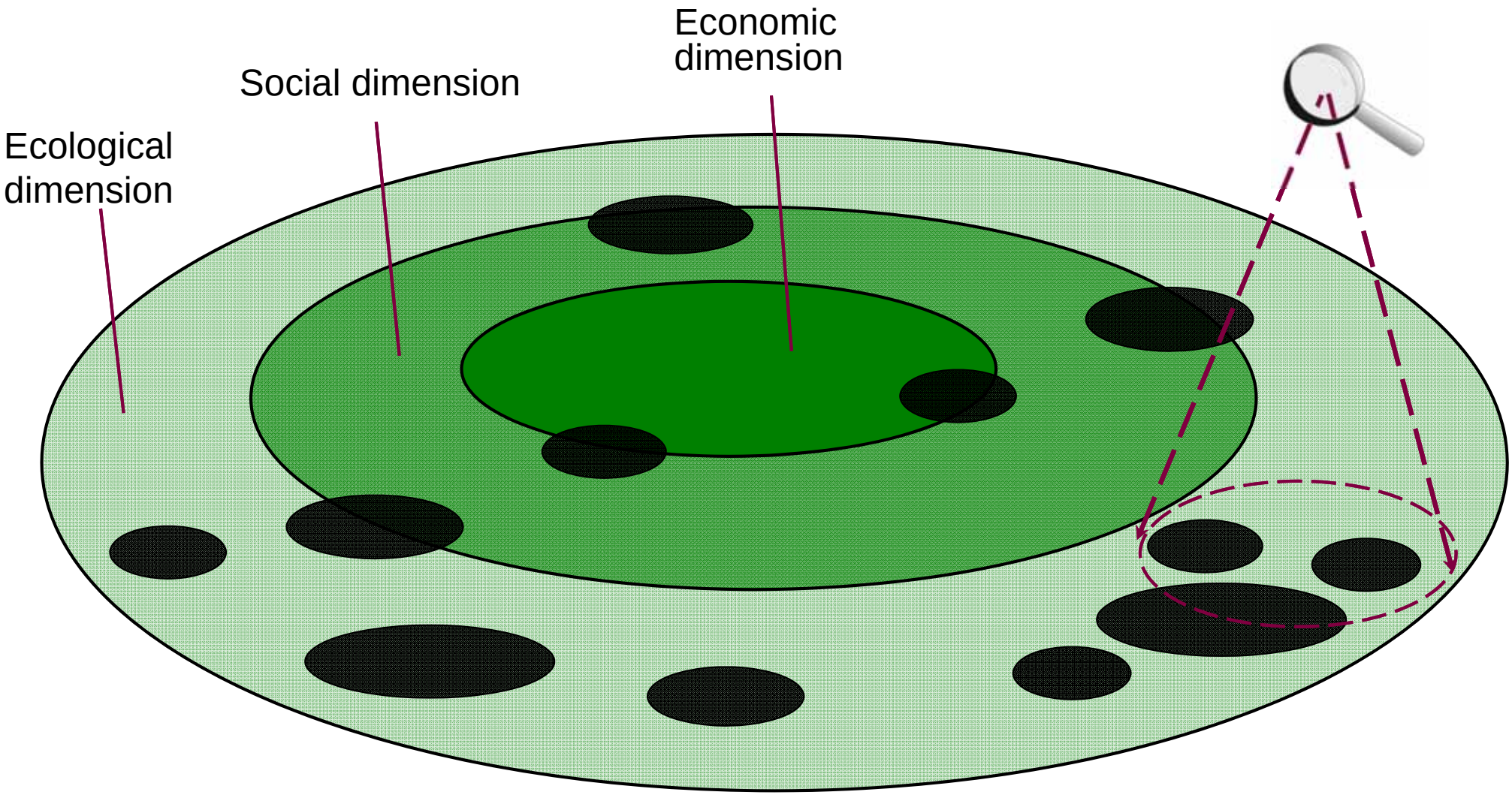
Always and at the same time

Eco-Municipality 5.0

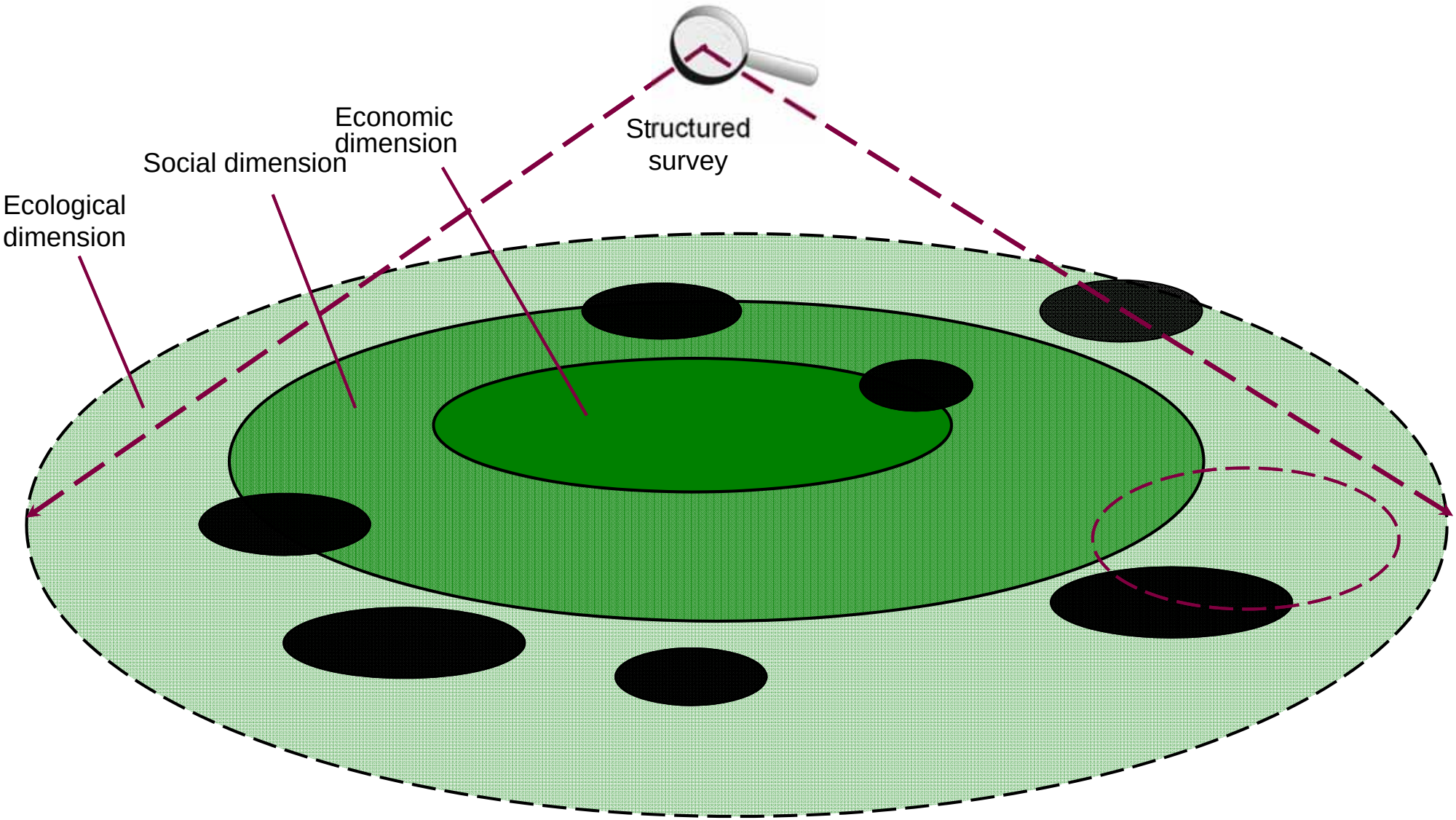
CONTENTS:

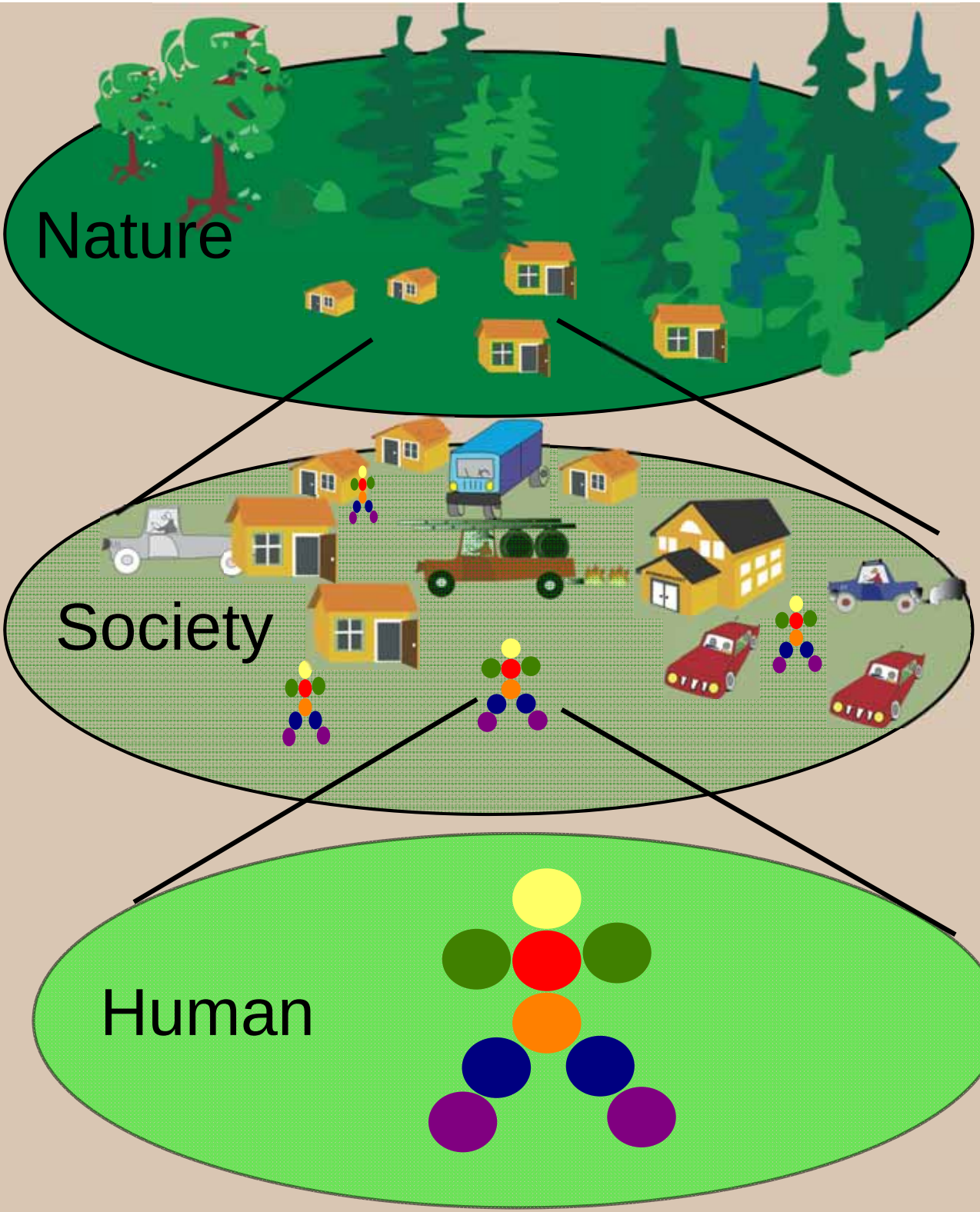
- System view

Regarding drill holes



and the way of making them useful for the whole:





Three important systems for sustainable development

Framework for Strategic Sustainable Development

Levels

The Eco-System

The Society

The Human

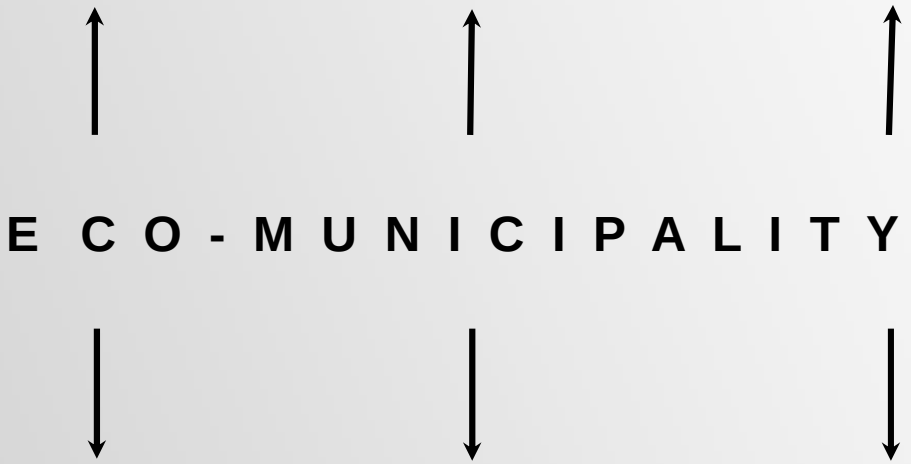
1.
The System
How it works

2.
Sustainable
Relationsship

3.
Strategies for
sustainable
development

4.
Activities for
sustainable
development

5.
Tools for
evaluation and
measurement



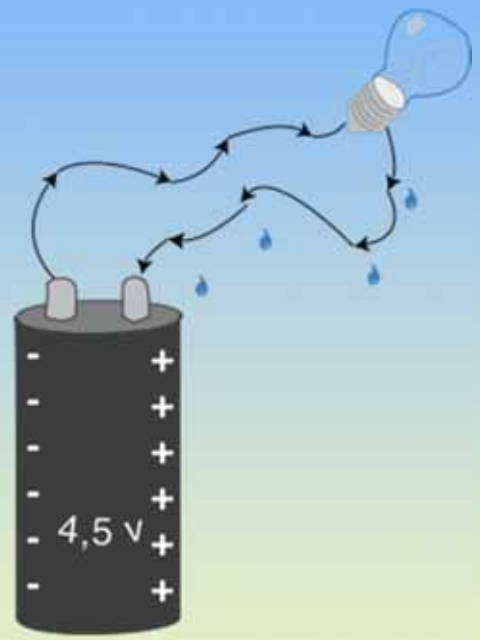
Framework for Strategic Sustainable Development

Levels	The Eco-System	The Society	The Human
1. The System How it works	Natural Laws		Fundamental needs
2. Sustainable relationships			
3. Strategies for sustainable development			
4. Activities for sustainable development			
5. Tools for evaluation and measurement			

Entropy = Chaos

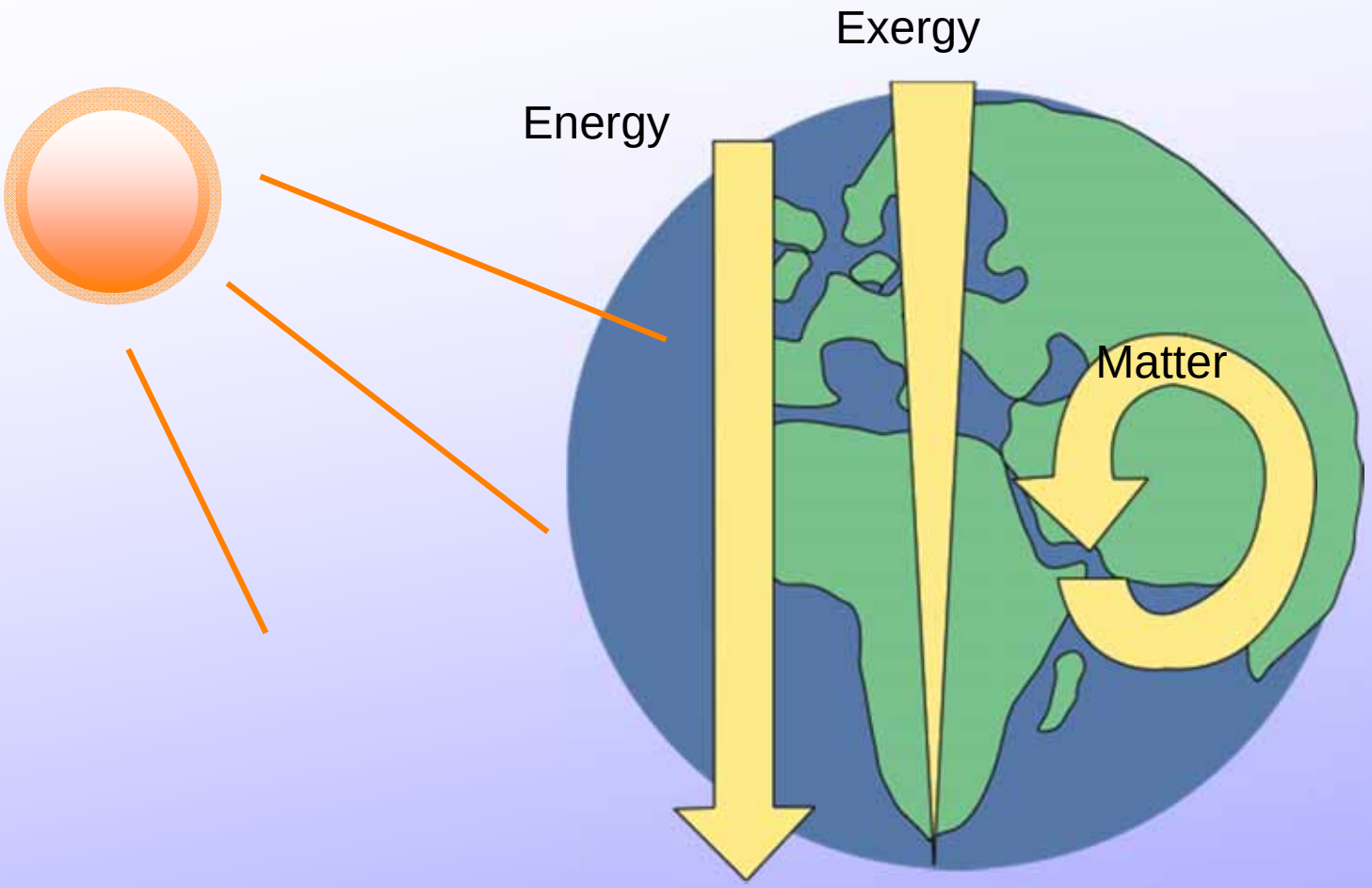
Exergy = Energy quality

Large amounts
of entropy
Low exergy



Small amounts
of entropy
High exergy

Short wave radiation from the sun

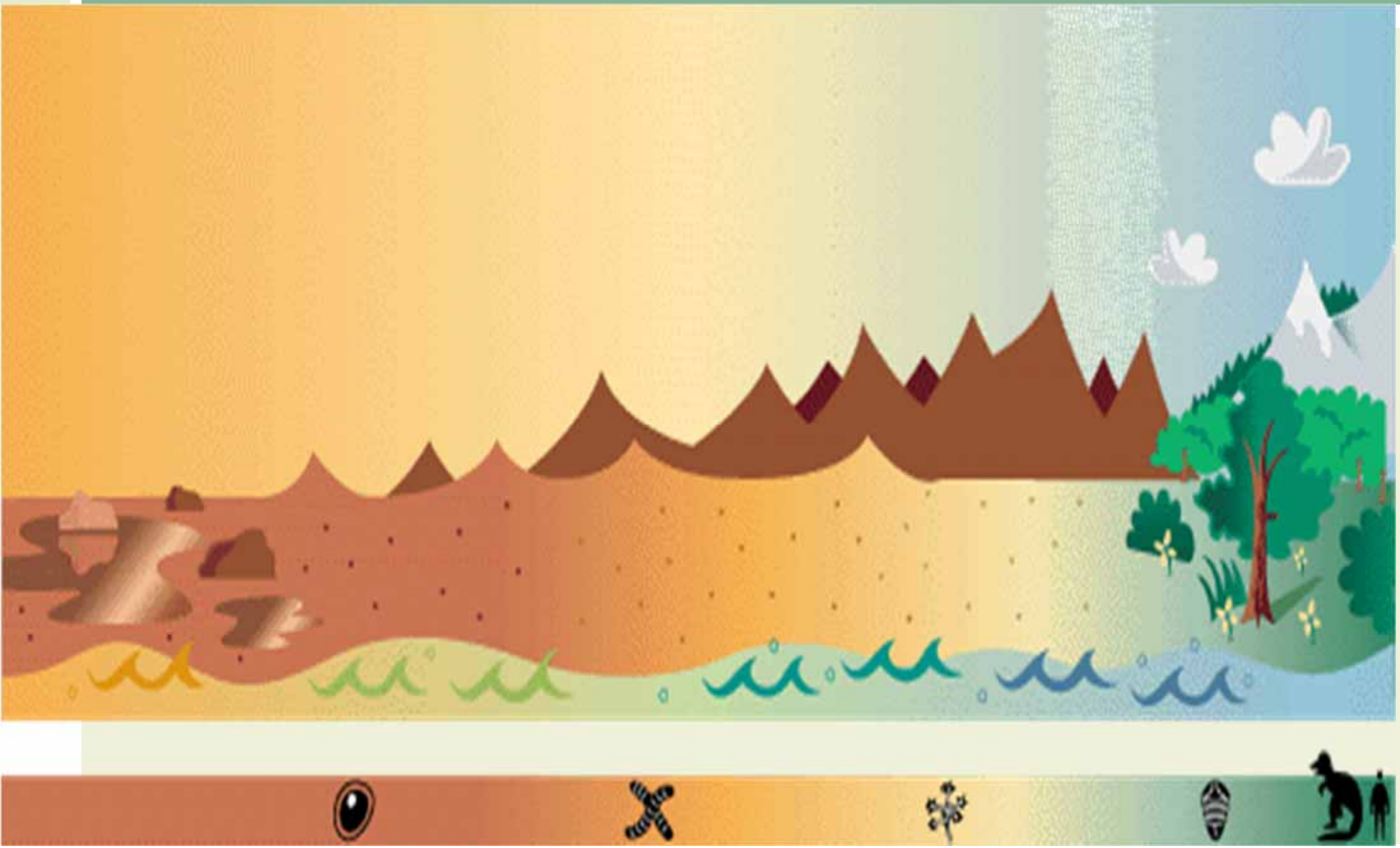


Long wave radiation out to space

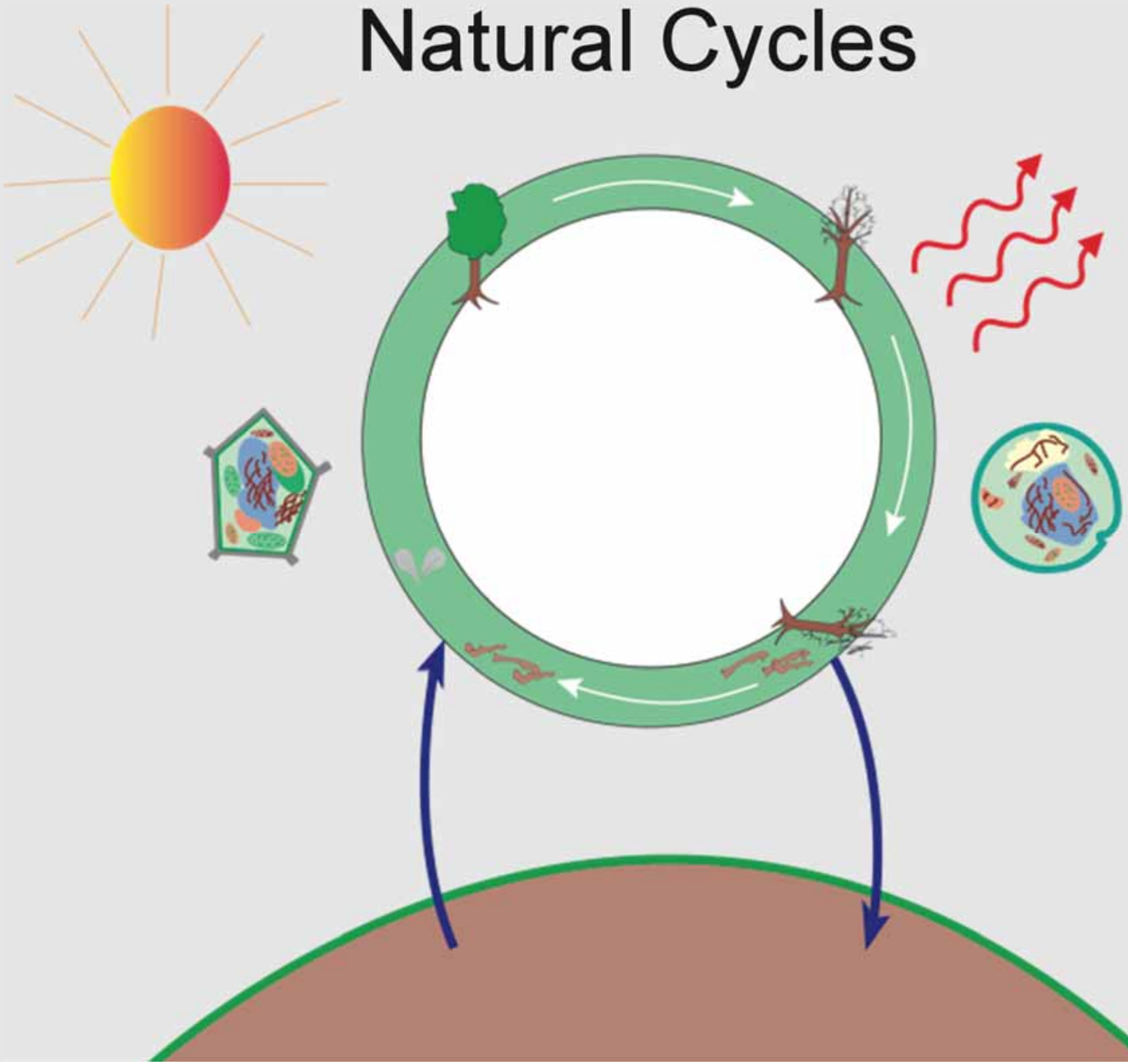
– We consume exergy, not energy or matter.

Source:
John Holmberg

the NATURAL STEP

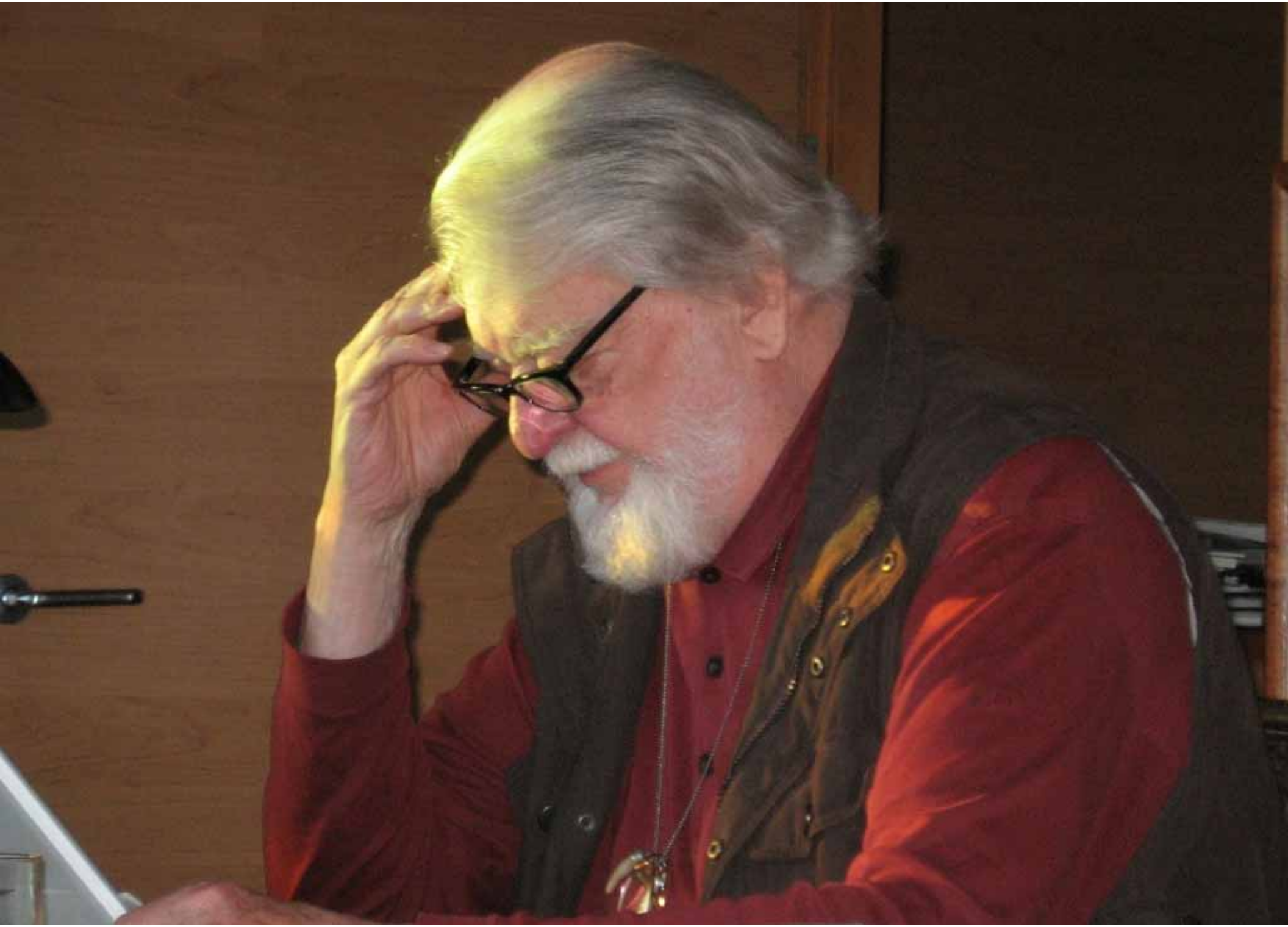


Natural Cycles



Framework for Strategic Sustainable Development

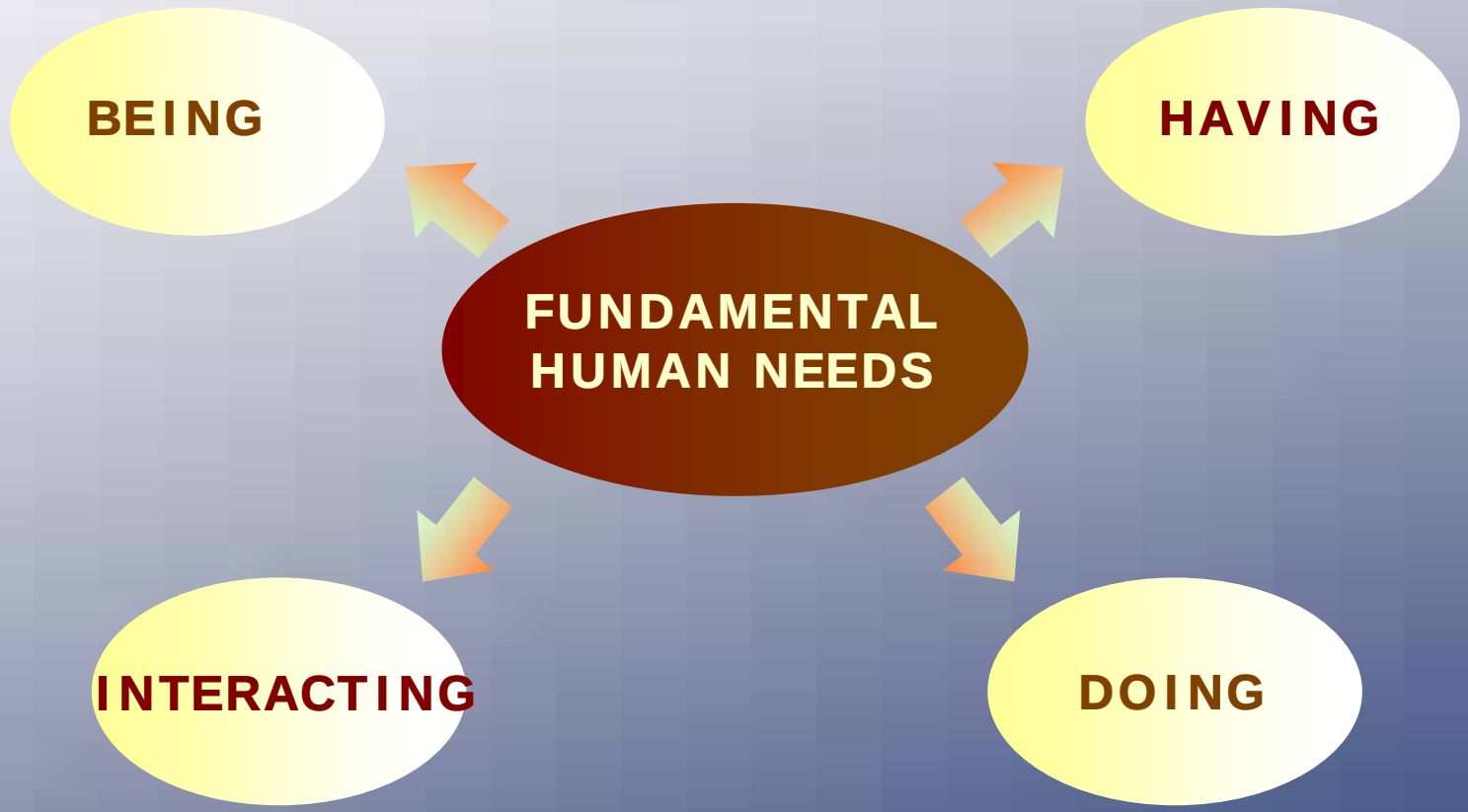
Levels	The Eco-System	The Society	The Human
1. The System How it works	Natural Laws		Fundamental needs
2. Sustainable relationships			
3. Strategies for sustainable development			
4. Activities for sustainable development			
5. Tools for evaluation and measurement			



The fundamental human needs

according to
Manfred Max-Neef

NEEDS (Ontological)



NEEDS Matrix

NEEDS	BEING	HAVING	DOING	INTERACTING
SUBSISTENCE				
PROTECTION				
AFFECTION				
UNDERSTANDING				
PARTICIPATION				
IDLENESS				
CREATION				
IDENTITY				
FREEDOM				

Framework for Strategic Sustainable Development

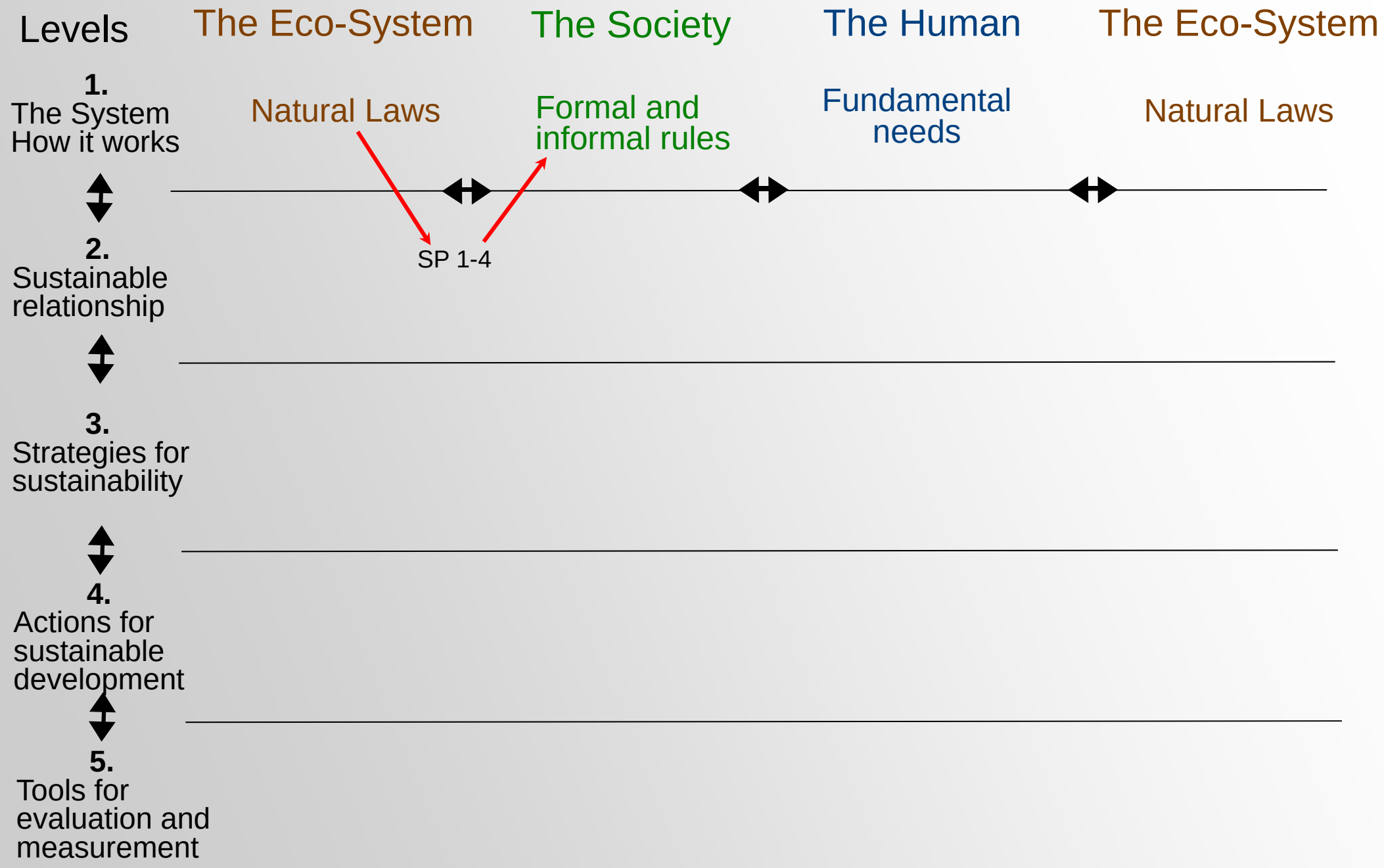
Levels	The Eco-System	The Society	The Human
1. The System How it works	Natural Laws	Formal and informal rules	Fundamental needs
2. Sustainable relationships			
3. Strategies for sustainable development			
4. Activities for sustainable development			
5. Tools for evaluation and measurement			

No society or civilization have existed for a long time without:

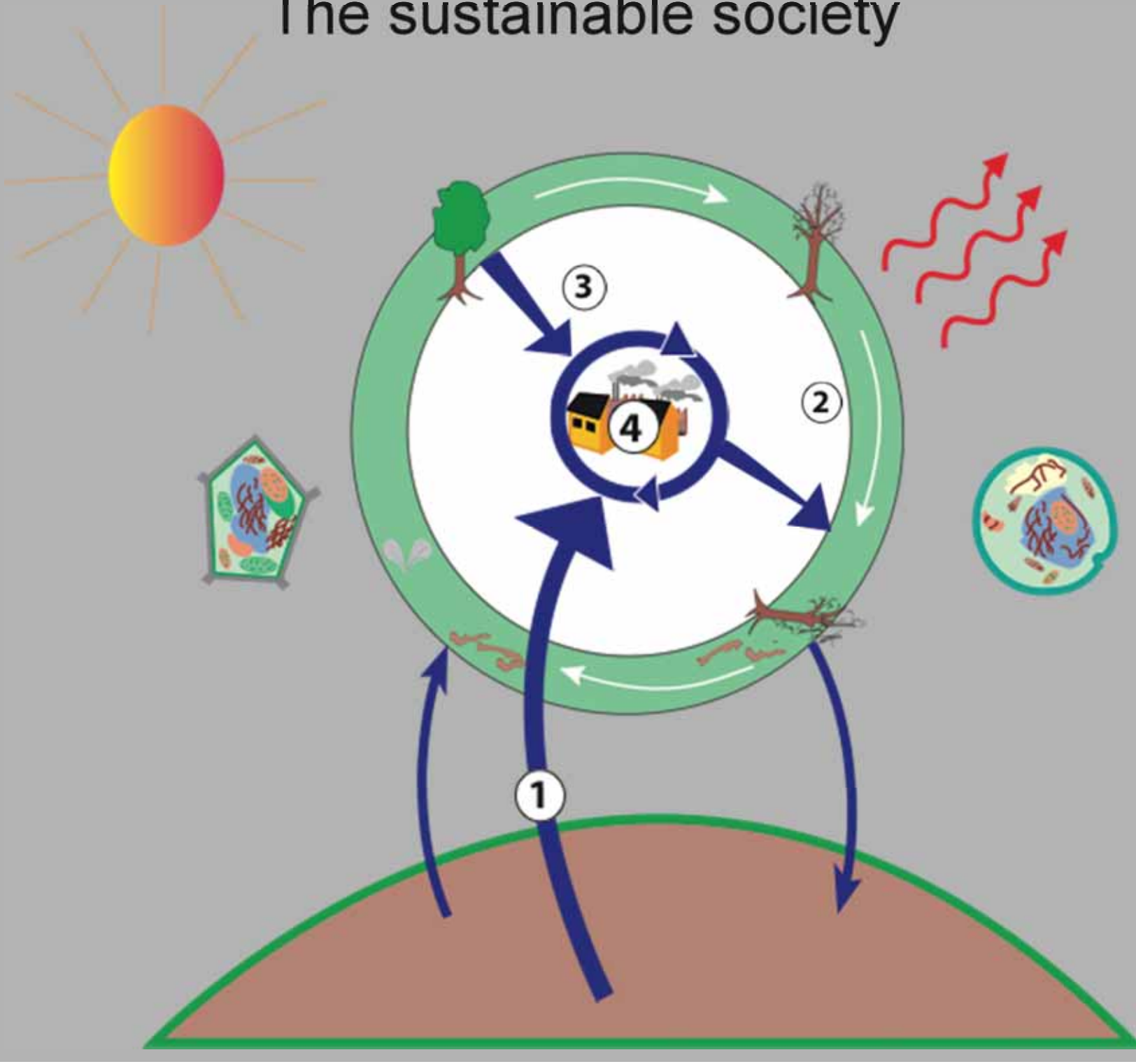
- being given the power to meet the fundamental need of citizens

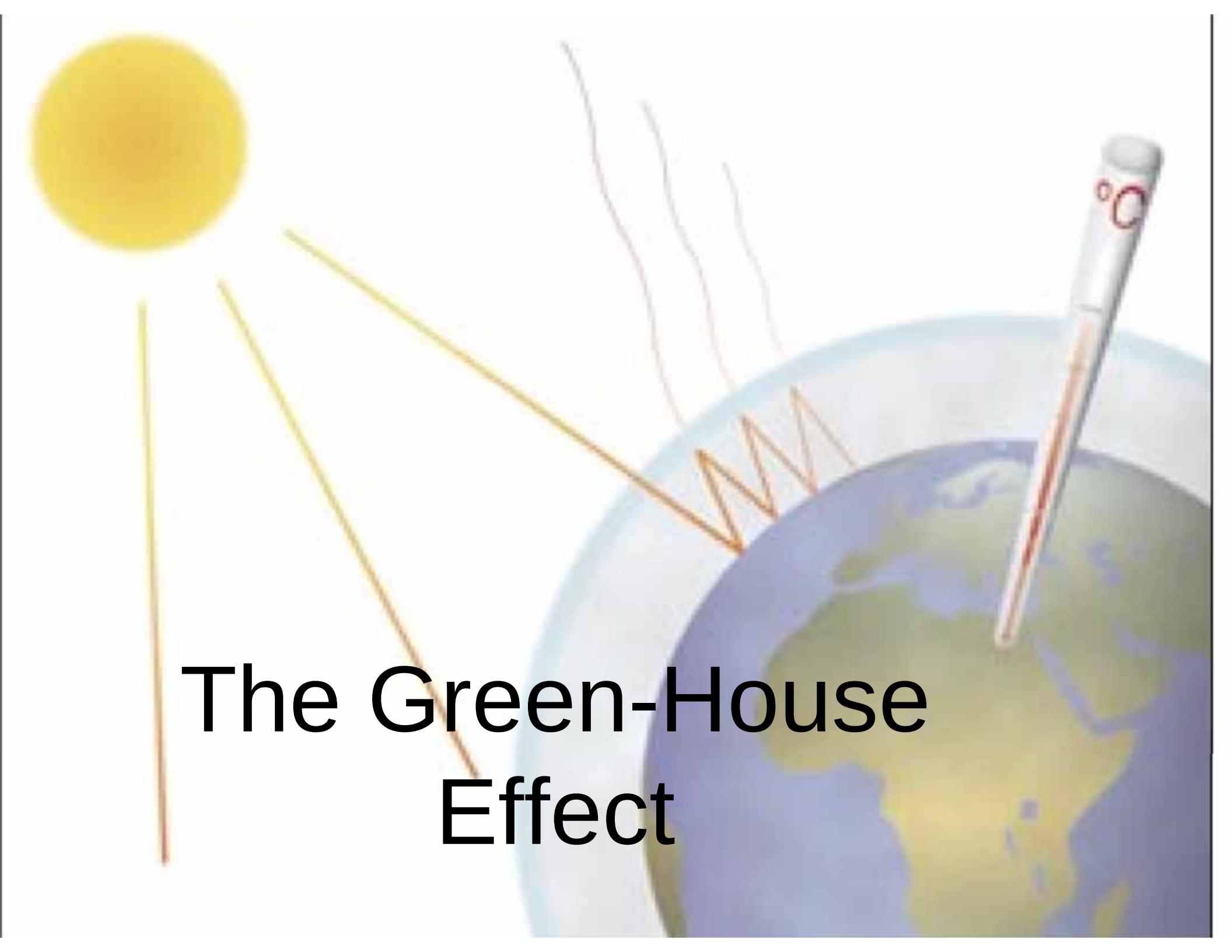
- stay within the frame-work of what nature can produce

Framework for Strategic Sustainable Development



The sustainable society





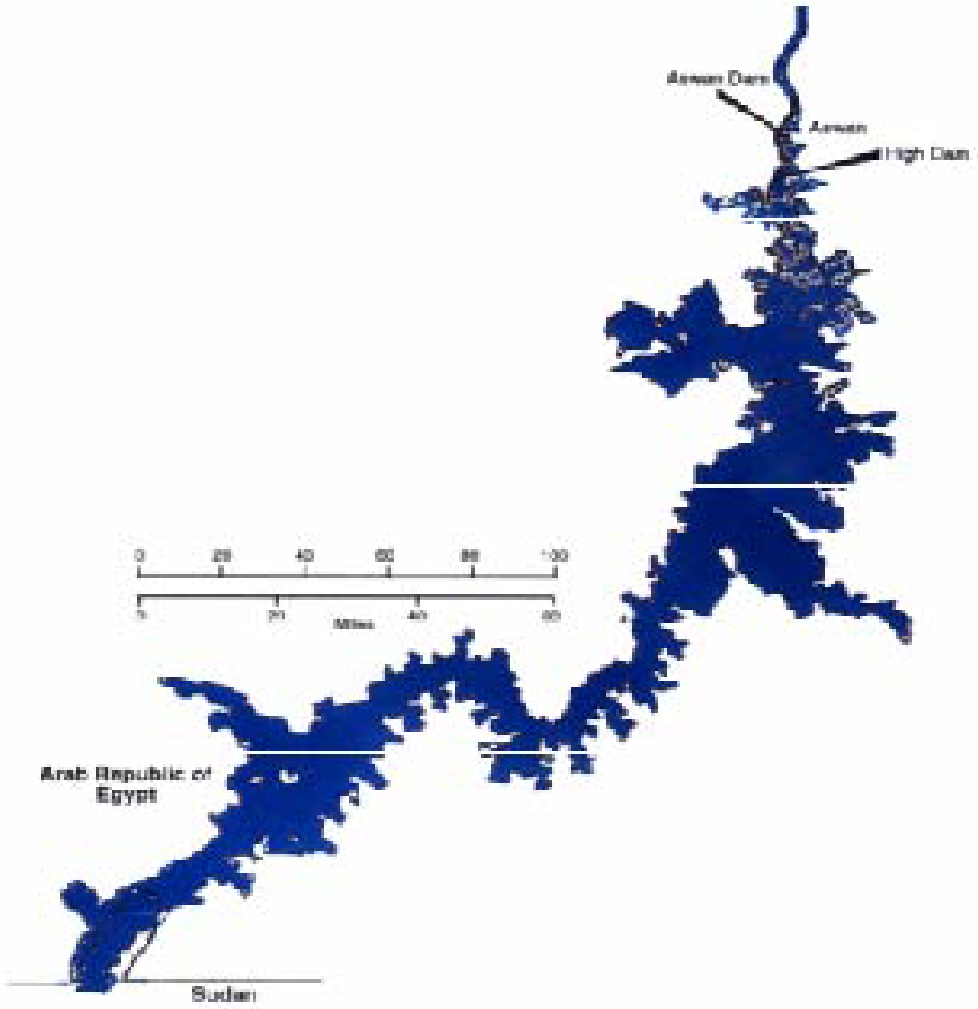
The Green-House Effect

Table 2
Summary of qualitative identifications of volatile compounds in mother's milk [a] (according to (32))

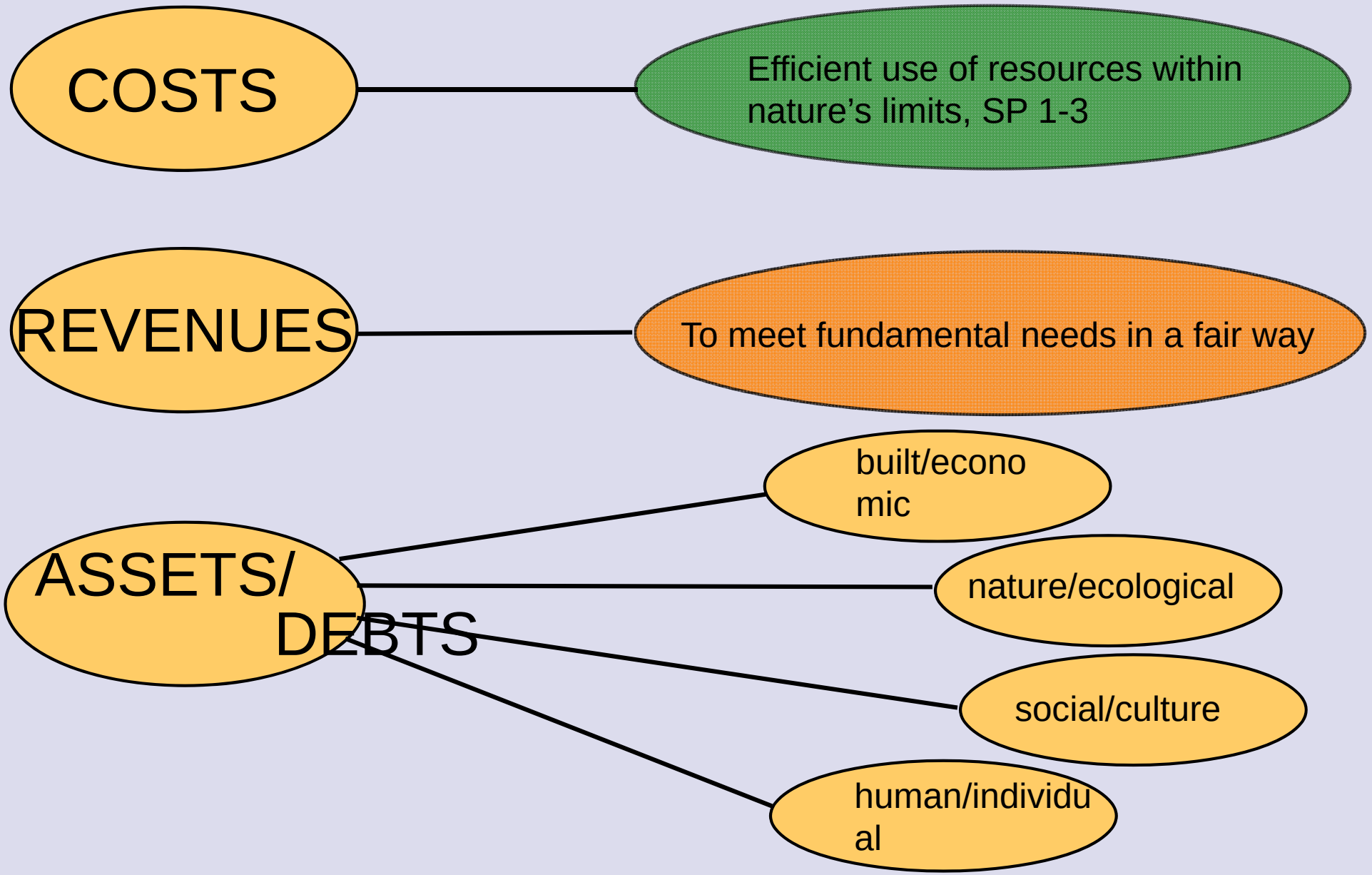
Compound	No. of times found [b]
Halogenated compounds	
chlorodifluoromethane	1
chlorotrifluoromethane	4
dichlorodifluoromethane	2
chloromethane	2
chloroethane	2
trichlorofluoromethane	7
dichloroethylene	1
Freon 113	8
methylene chloride	8
chloroform	7
1,1,1-trichloroethane	8
carbon tetrachloride	5
trichloroethylene	8
chloropentane	2
dibromochloromethane	1
tetrachloroethylene	7
dichloropropene	1
chlorobenzene	5
chlorohexane	4
iodopentatne	1
3-methyl-1-iodobutane	2
chloroethylbenzene	1
dibromodichloromethane	1
dichlorobenzene	8
chlorodecane	1
trichlorobenzene	1
Aldehydes	
acetaldehyde	4
methyl propanal	2
n-butanal	6
methylbutanal	2
crotonaldehyde	1
n-pentanal	7
n-hexanal	8
furaldehyde	2
n-heptanal	7
benzaldehyde	8
n-octanal	3
phenyl acetaldehyde	1
n-nonanal	6
methyl furaldehyde	1
n-decanal	2
n-undecanal	2
n-dodecanal	.
Ketones	
acetone	8
methyl ethyl ketone	5
methyl propyl ketone	2
methyl vinyl ketone	1
ethyl vinyl ketone	4
2-pentanone	4
methyl pentanone	2
methyl hydrofuranone	1
2-methyl-3-hexanone	1
4-heptanone	1
3-heptanone	4
2-heptanone	6
methyl heptanone	2
furyl methyl ketone	1
octanone	2
acetophenone	8
2-nonanone	4
2-decanone	1
alkylated lactone	1
phthalide	1
Other oxygenated isomers	
C_4H_8O	1
C_5H_8O	2
$C_5H_{10}O$	5
C_6H_6O	1
$C_6H_{12}O$	2
$C_6H_6O_2$	1
$C_6H_{12}O$	2
$C_7H_{12}O$	4
$C_7H_{10}O$	2
$C_7H_{14}O$	2
$C_7H_6O_2$	1
$C_7H_{14}O_2$	1
$C_8H_{16}O$	2
$C_8H_8O_2$	2
$C_8H_{16}O_2$	1
$C_8H_{14}O$	3
$C_8H_8O_2$	1
$C_{10}H_{12}O_2$	1
$C_{10}H_{14}O$	1
$C_{10}H_{14}O$	2
$C_{10}H_{18}O$	3
$C_{10}H_{20}O$	2
$C_{10}H_{22}O$	1
$C_9H_6O_2$	1
$C_{11}H_{20}O$	1
$C_{10}H_{10}0_2$	1
Alcholols	
methanol	1
isopropanol	8
2-methyl-2-propanol	1
n-propanol	1
l-butanol	3
l-pentanol	4
α-furfuryl alcohol	2
2-ethyl-l-hexanol phenol	1
2,2,4-trimethylpenta-1,3-diol	1
α-terpineol	1
Acids	
acetic acid	2
decanoic acid	1
Sulfur Compounds	
sulfur dioxide	1
carbon disulfide	8
dimethyl disulfide	6
carbonyl sulfide	1
Nitrogen Compounds	
nitromethane	1
$C_3H_6N_2$	1
$C_4H_9N_2$	1
$C_3H_7N_2O$	1
methyl acetamide	1
benzonitrile	3
methyl cinnoline	1
Esters	
vinyl propionate	3
ethyl acetate	1
ethyl-*n*-caproate	1
isoamyl formate	1
methyl decanoate	1
ethyl decanoate	1
Ethers	
dimethyl ether	1
dihydropyran	2
Epoxide	
1,8-cineole	1
Furans	
furan	1
tetrahydrofuran	1
methyl furan	2
methyl tetrahydrofuran	1
ethylfuran	2
dimethyifuran	1
2-vinylfuran	1
furaldehyde	2
2-*n*-butylfuran	1
2-pentylfuran	7
methylfuraldehyde	1
furyl methyl ketone	1
α-furfuryl alcohol	2
benzofuran	3
Alkanes	
C_3H_8	1
C_4H_{10}	6
C_5H_{12}	8
C_6H_{14}	8
C_7H_{16}	7
C_8H_{18}	7
C_9H_{20}	8
$C_{10}H_{22}$	7
$C_{11}H_{24}$	7
$C_{12}H_{26}$	7
$C_{13}H_{28}$	3
$C_{14}H_{30}$	3
$C_{15}H_{32}$	2
Alkenes	
C_3H_6	2
C_4H_8	5
C_5H_{10}	3
C_6H_{12}	8
C_7H_{14}	8
C_8H_{16}	8
C_9H_{18}	7
$C_{10}H_{20}$	6
$C_{11}H_{22}$	6
$C_{12}H_{24}$	1
$C_{13}H_{26}$	1
isoprene	1
Alkynes	
C_4H_6	2
C_5H_{10}	1
C_5H_{12}	3
C_6H_{14}	3
C_6H_{10}	4
$C_{10}H_{18}$	2
$C_{12}H_{22}$	1
Cyclic	
cyclopentane	6
methyl cyclopentane	6
cyclohexane	5
ethyl methyl cyclohexane	1
$C_{10}H_{14}$ isomers	1
$C_{10}H_{16}$ isomers (other)	4
limonene	8
methyl decalin	1
α-pinene	1
camphene	1
camphor	1
Aromatic	
benzene	8
toluene	8
ethylbenzene	8
xylene	8
phenyl acetylene	1
styrene	8
benzaldehyde	8
C_3-alkylbenzene isomers	8
C_4-alkylbenzene isomers	6
methyl styrene	2
dimethyl styrene	5
C_5-alkylbenzene isomers	2
naphthalene	6
C_6-alkylbenzene isomers	1

[a] Arranged by class in approximate elution order.
[b] Twelve total samples: 6-Bayonne, NJ; 2-Jersey City, NJ; 2-Bridgeville, PA, and 2-Baton Rouge, LA.

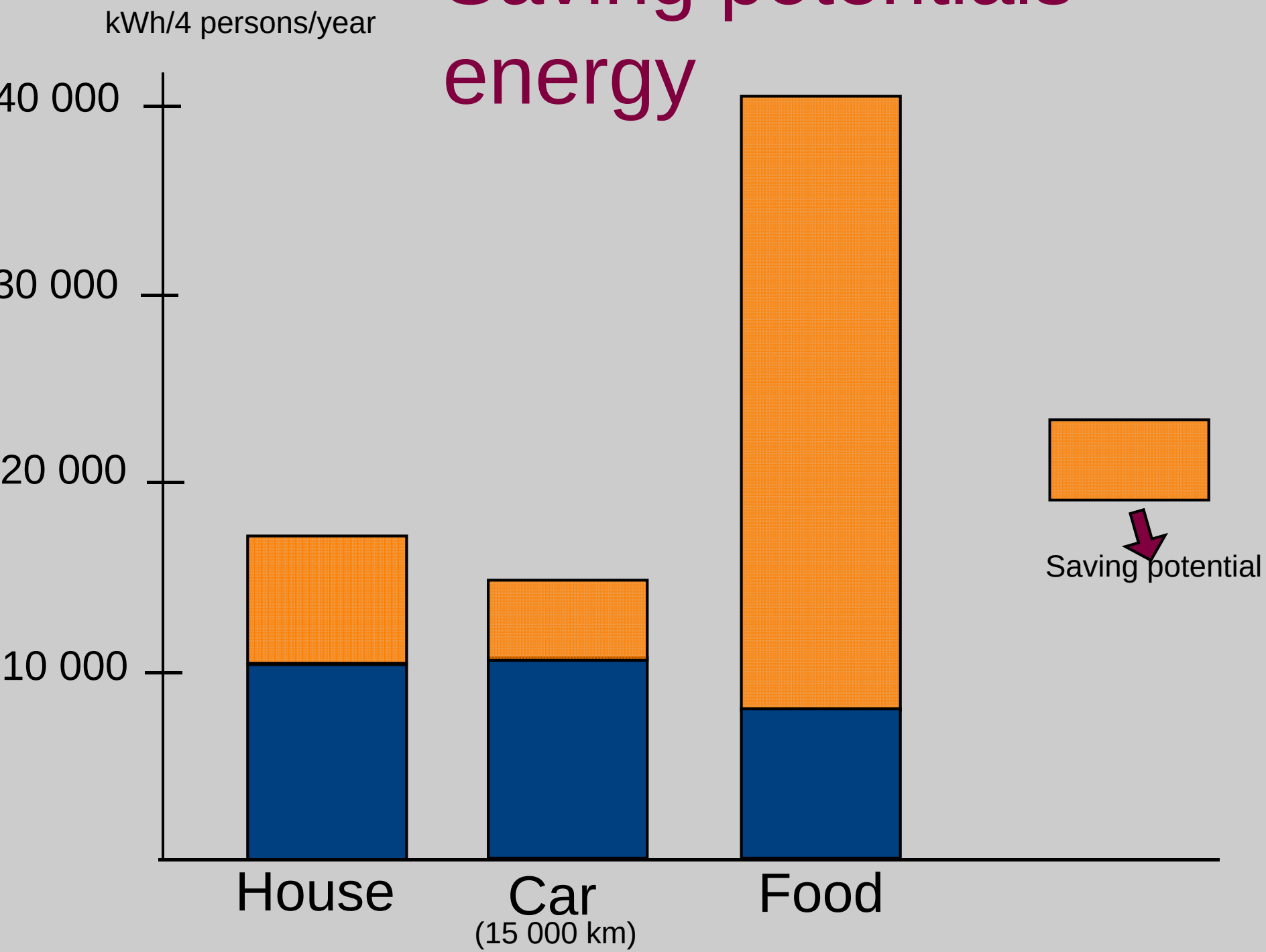
Land Impact of Solar Thermal Technologies Compared with Hydroelectric



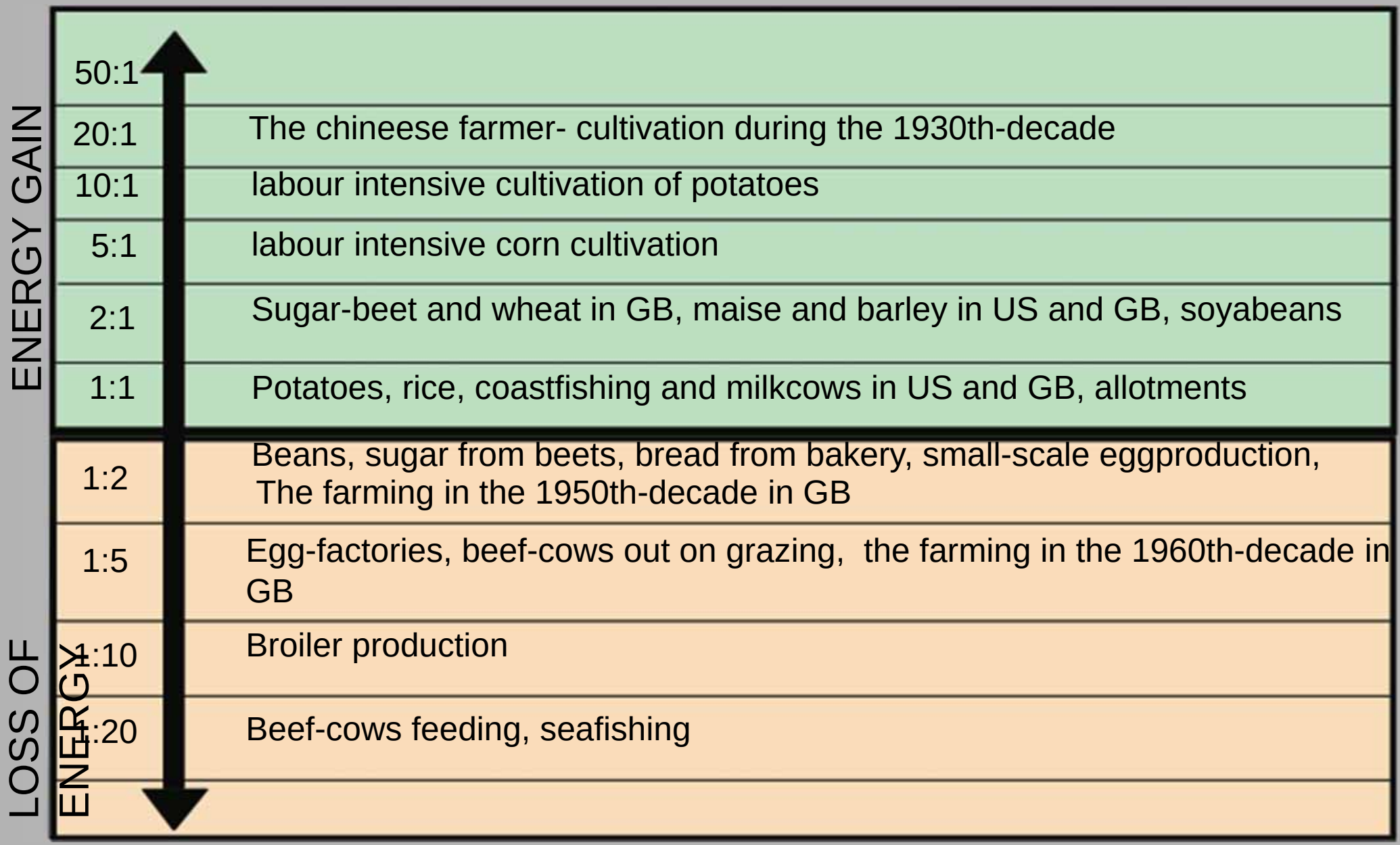
Economic Sustainability, SP 4



Saving potentials – energy



Input of energy per extracted energy (foodproduction)



Source: “V. Bokalders”, Bygg Ekologi nr 4


HE JAPON SENDAI
蕪栗沼・ふゆみずたんぼプロジェクト（大崎市）
Kabukurinuma Fuyumizu-tambo Project (Osaki City)

The four System Conditions are:

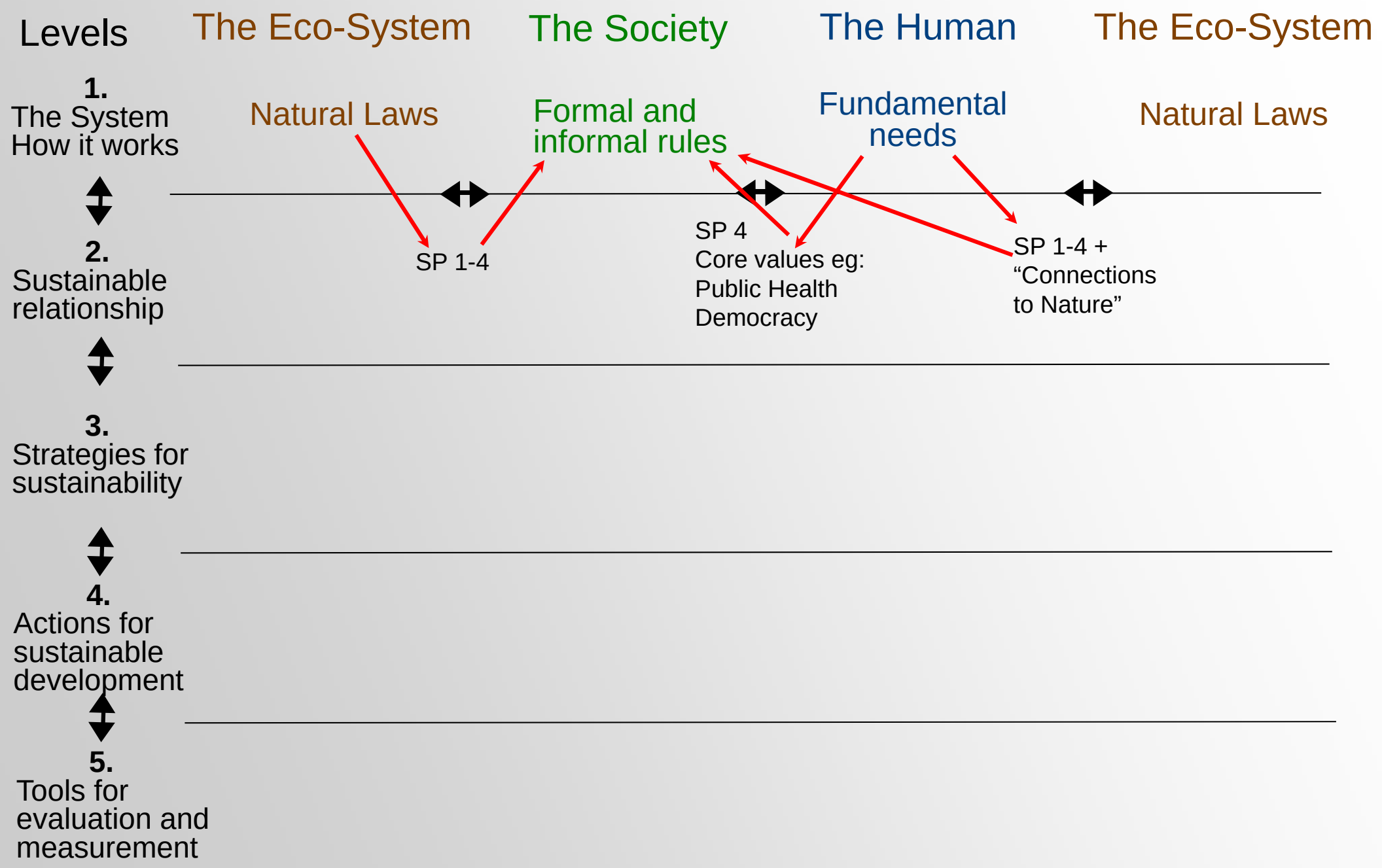
- based on a scientifically accepted worldpicture
- necessary to reach sustainability
- enough to cover all aspects of the sustainability concept
- general enough to include all relevant activities of sustainability
- concrete enough to give guidance of activities as direction goals in problem analysises and solutions
- mutual exclusive and together complete to facilitate structural analysises of the issues

Sustainability Principles
Using the Natural Step* Process

CRUST	SUBSTANCES	NATURE	FAIRNESS
			
Reduce Dependence On Fossil Fuels	Reduce Dependence On Synthetic Chemicals	Reduce Encroachment On Nature	Meet Human Needs Fairly & Efficiently

*__From the Natural Step Framework:__ James, S. and T Lahti, (2004). *The Natural Step for Communities: How Cities and Towns Can Change to Sustainable Practices.*

Framework for Strategic Sustainable Development

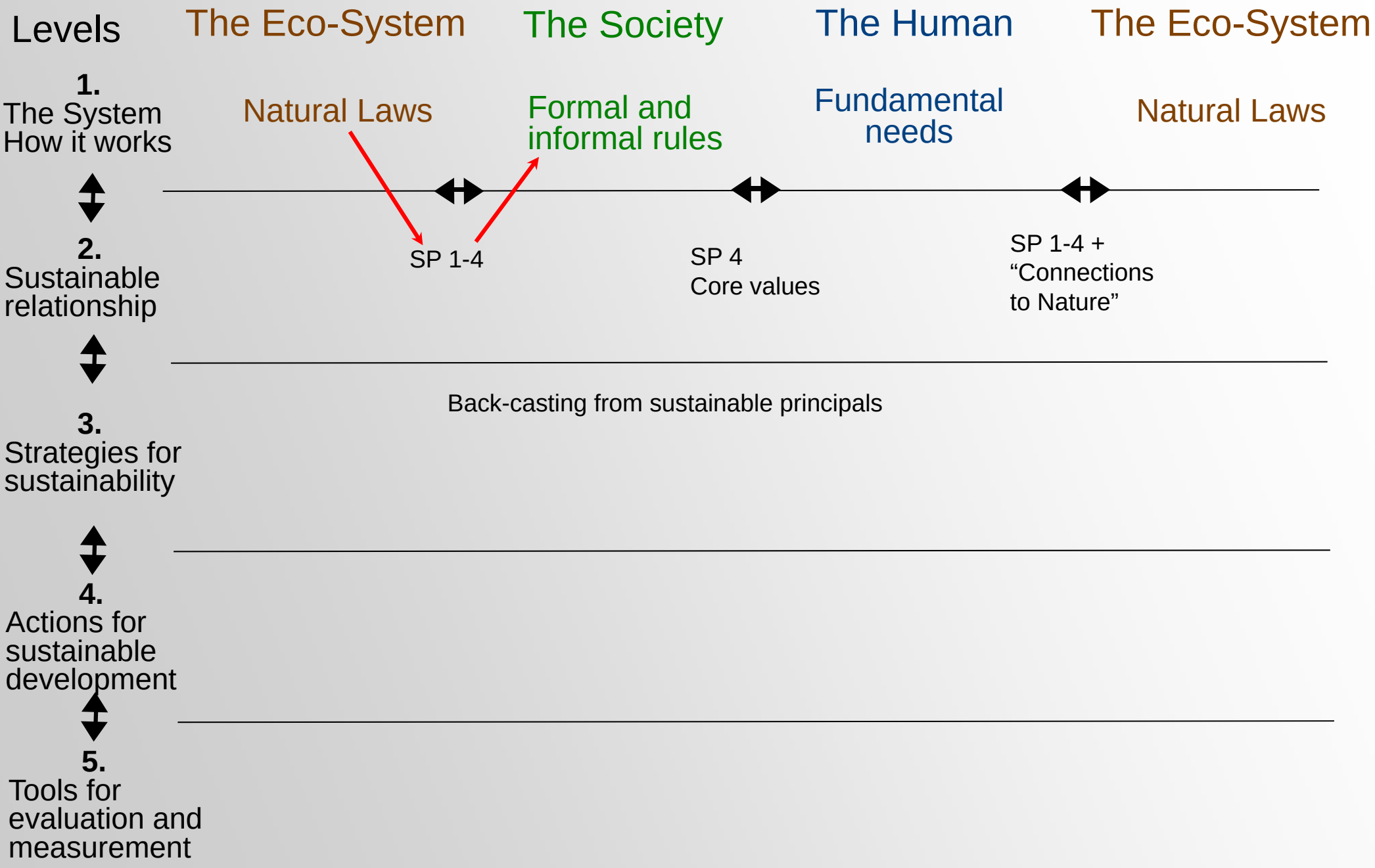


Eco-Municipality 5.0

CONTENTS:

- System view
- Visionary process – “back-casting”

Framework for Strategic Sustainable Development



Checklist for the action programme

- Is the activity/action leading towards sustainability ?
- Is the activity/action creating a flexible plattform ?
- Does the activity/action pay-off?
- Do we know enough?

Eco-Municipality 5.0

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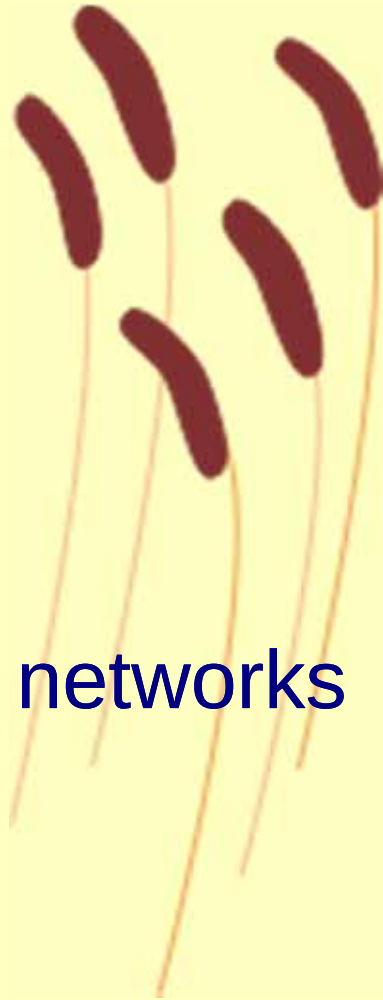
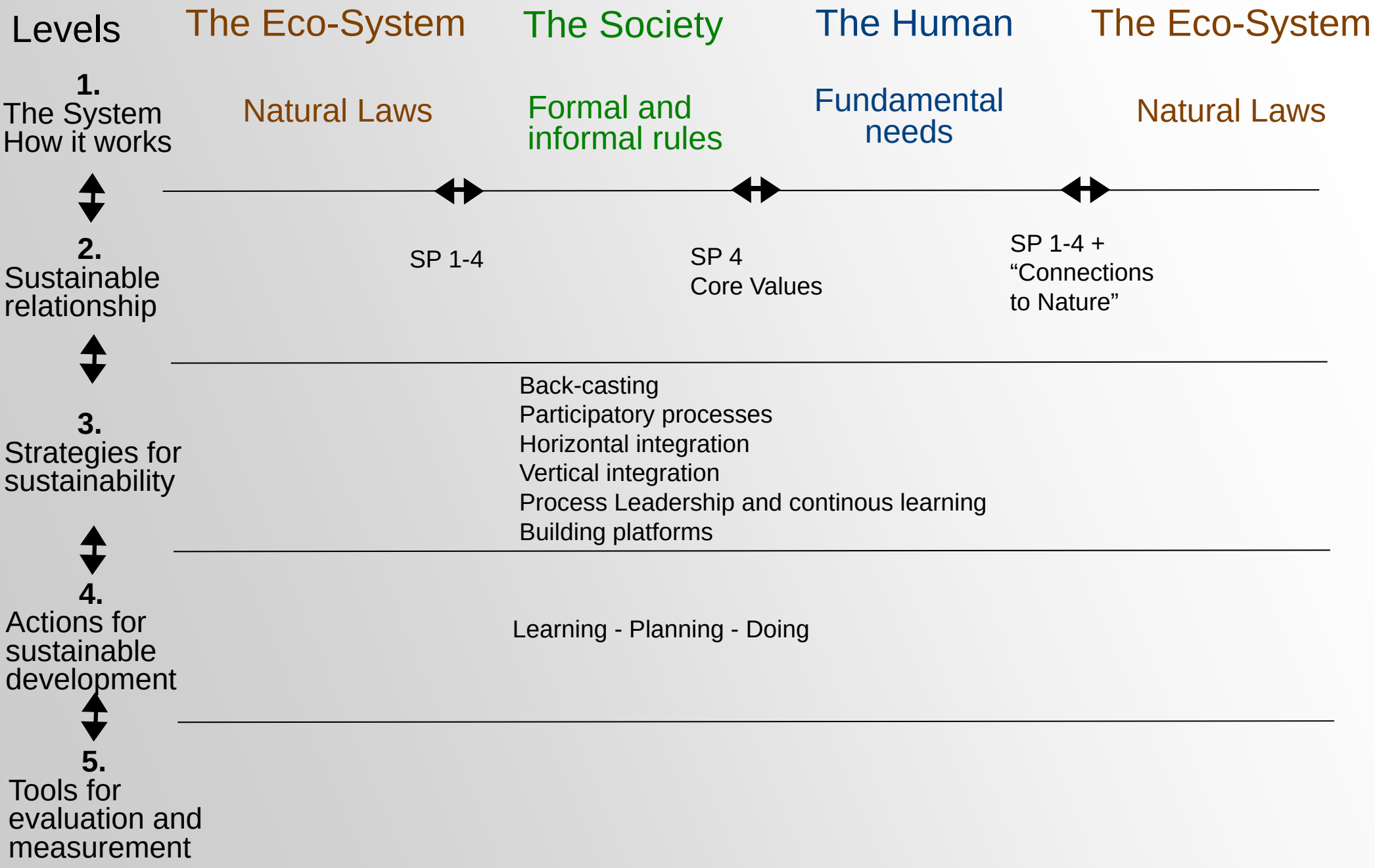
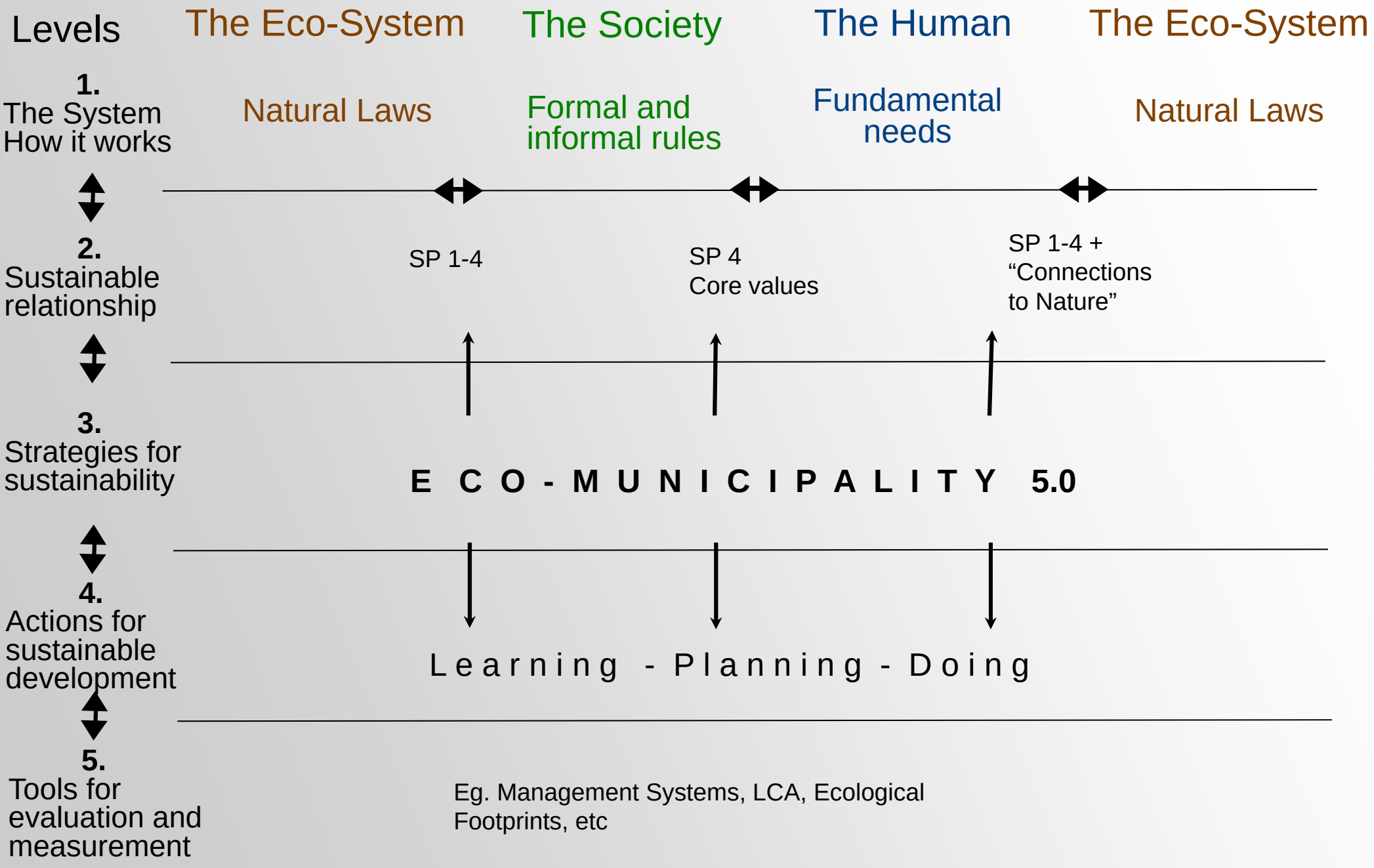


Framework for Strategic Sustainable Development



Framework for Strategic Sustainable Development



Thank you!

We need Rules for the SD game!

The four chambers of change

According to Claes Jansen