

# Session #3

## System Condition & State of the Earth

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# Metaphors to illustrate sustainable core principles



*Building a conceptual model for  
Sustainability:*

*Ecological  
Sphere*

*Economical  
Sphere*

*Social  
Sphere*

*How they are related and influenced?*

# *Quote of the day*

“Anyone who believes in indefinite growth on a physically finite planet is either mad, or an economist.”

Commonly attributed to David Attenborough, who actually was quoting **Kenneth Boulding**, environmental adviser of President Kennedy

# System Conditions

A lot of "buzz words"



# System Conditions

Basic science

*Open system with respect to energy*

*« Photosynthesis pays the bill »*

*Slow geological cycles  
(volcano eruptions and weathering)*

**Sustainability is about the ability of our own human society to continue indefinitely within these natural cycles**

BIOSPHERE

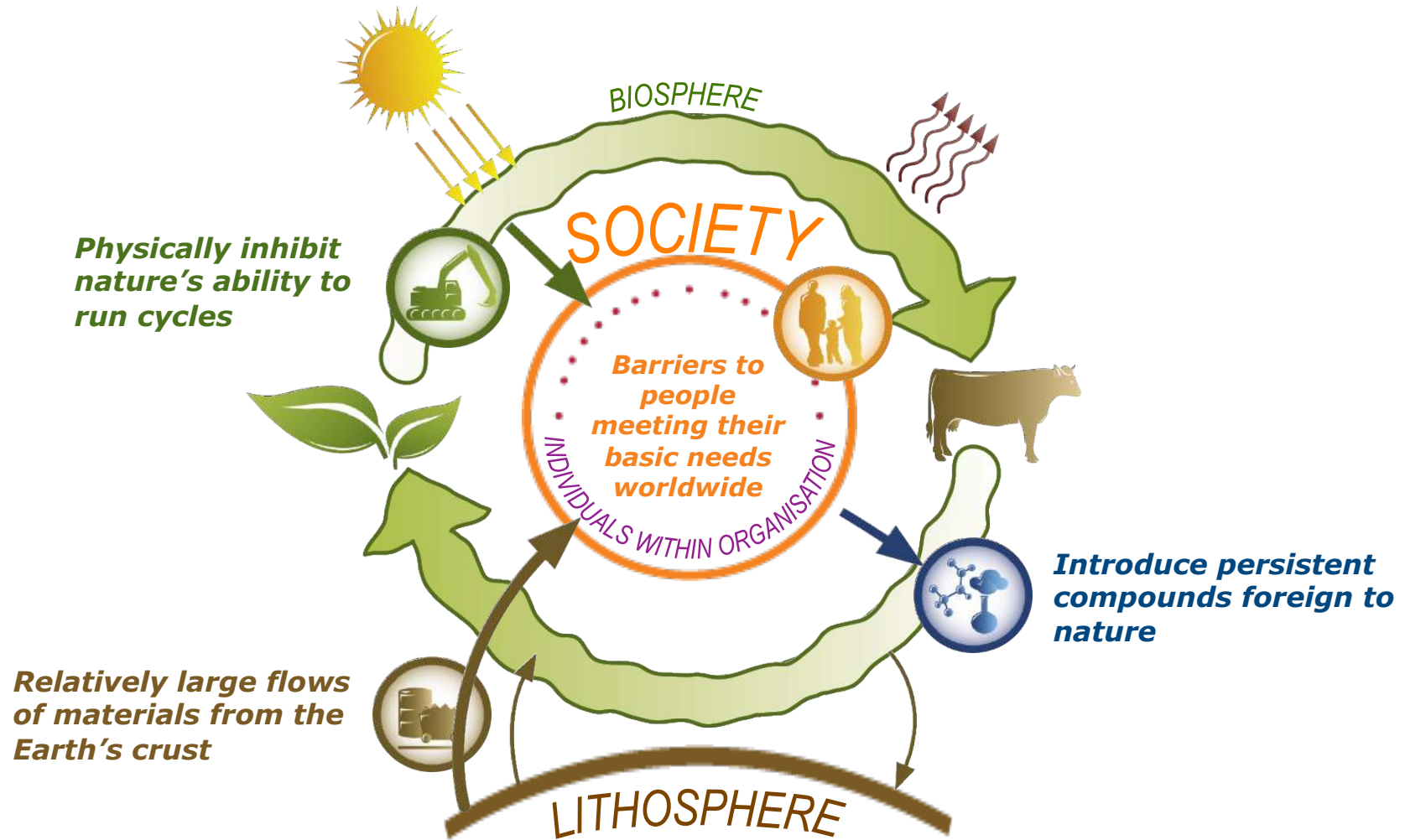
*Slow geological cycles  
(sedimentation and mineralization)*

LITHOSPHERE

*Closed system with respect to matter*  
1) Nothing disappears  
2) Everything disperses

# System Conditions

## How we influence circle



# System Conditions

## 4 sustainability principles

*In a sustainable society, nature is not subject to systematically increasing...*



***...concentrations of substances extracted from the Earth's crust,***



***...concentrations of substances produced by society,***



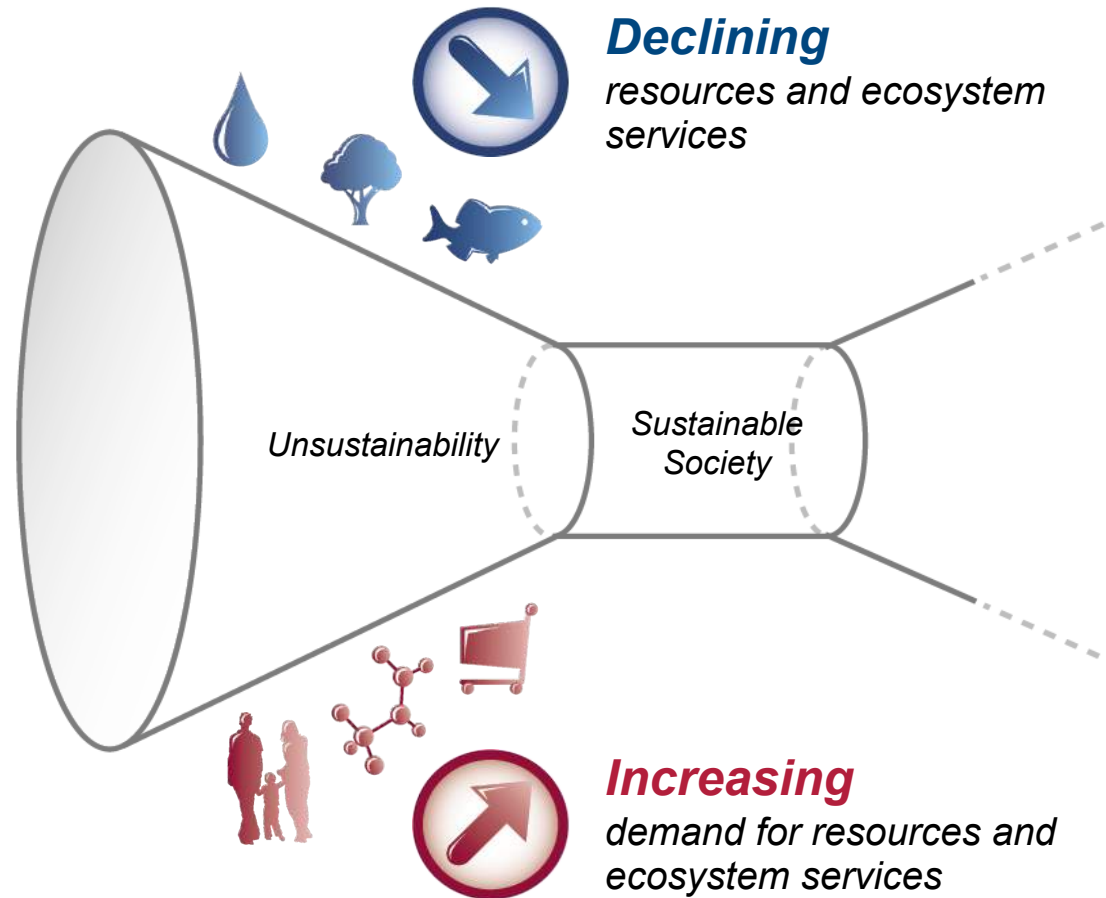
***...degradation by physical means,***

*and, in that society...*



***...people are not subject to conditions that systematically undermine their capacity to meet their needs.***

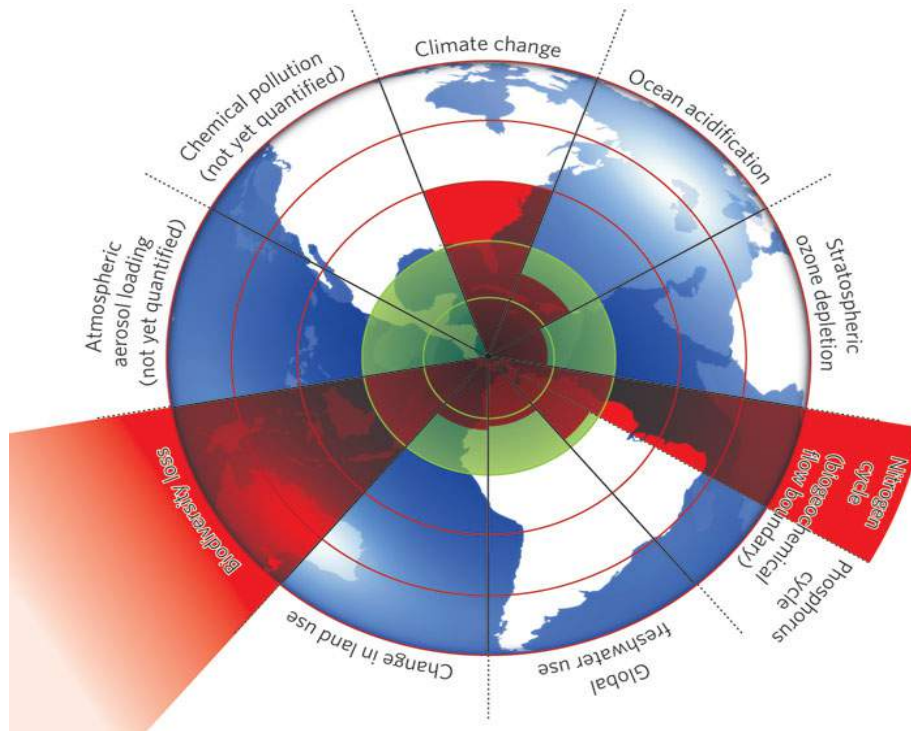
# The Facts



*Source – The Natural Step*



# System Conditions







*Planetary Boundaries*



*The Natural Step  
4 principles*

# System Conditions

Sustainability Life Cycle Assessment (SLCA)

		Sustainability Principles			
		Mined Materials 	Man-made Substances 	Physical Degradation 	Social Barriers 
Life cycle stages	Raw materials				
	Operations				
	Packaging & distribution				
	Use				
	End of life				

# System Conditions

ROLE Play

In your groups Map out the life cycle of your product: **Coffee, Smartphone, Jeans**, etc...from the field till the end!

- Focus on the main processes
- Have fun drawing the symbols that represent each stage
- Discuss environmental and social issues for each stage
- **Note what system conditions is involved during your discussion**



# System Conditions

ROLE Play



*Jeans*



*Smartphone*



*A cup of coffee*

List 5 sustainability  
challenges for this  
product

# System Conditions

ROLE Play



Jeans is designed in **Italy**  
Cotton is harvested in **India**

Fibers are spun in **China**

Whitened and Colored in **Philippines**

Made in **Guatemala**

Labeled in **USA**

Sold in **Spain**

Once used, in second hand market in **Uganda**