



**Sustainable World Initiative**  
*Research, education, and policy guidance*  
*for a better global future.*

## **The Global Sustainability Challenge (aka: The Human Predicament)**

**Issue framing for the MAHB-Population Workshop**  
**March 23 -24, 2014**

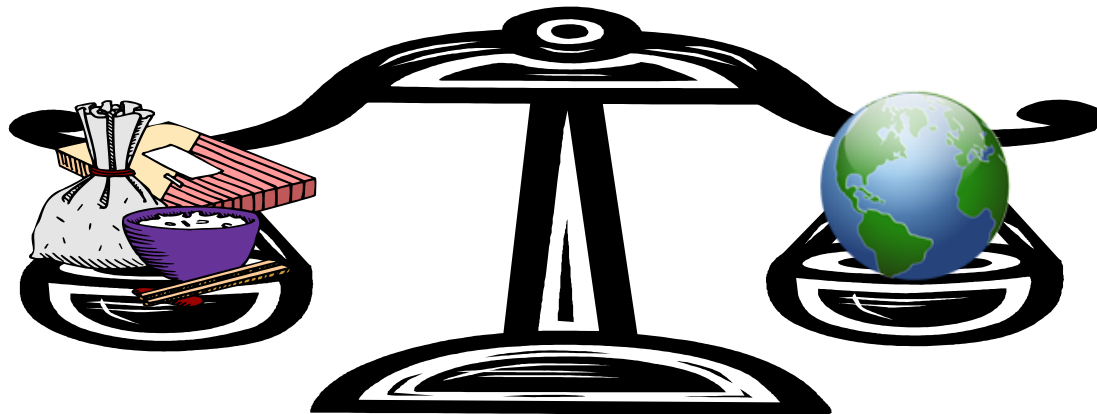




## Sustainable World Initiative

*Research, education, and policy guidance for a better global future.*

*Understanding the balance between human needs and environmental resources*





## **Sustainable World Initiative**

*Research, education, and policy guidance for a better global future.*

Global initiative based in Washington DC

Population f(biological and geophysical realities)

Macro - 30,000 foot view - national/global scale

***Research: Integrated Resource Analysis***



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*[Research, education, and policy guidance for a better global future.](#)*

### Objectives:

Provide information and tools for sustainability education

Promote resource sufficiency evaluation (RSE) and reporting in national governance

Make population part of the sustainable development dialog and part of the global sustainability solution

Highlight the need to rapidly stabilize human populations (U.S. and global).



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# The Problem

(The Global Development/Sustainability Challenge)

**Climate change is not the problem.**





**Water shortages, overgrazing, erosion, desertification and the rapid extinction of species are not the problem.**

# Deforestation,





**Deforestation,**  
**reduced cropland**  
**productivity,**





**Deforestation,  
reduced cropland  
productivity,  
and the collapse  
of fisheries are not  
the problem.**



**Each of these crises,  
though alarming,  
is a symptom of a  
single,  
over-riding issue.**



**Humanity is simply demanding more than the earth can provide.**



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The Problem:

Collective overuse of natural  
resources (NR)



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The Problem:

“Global Sustainability  
Challenge”



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The Problem:

**“The Human Predicament”**



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The Problem:

Collective overuse of natural  
resources (NR)





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Which one is the Problem?

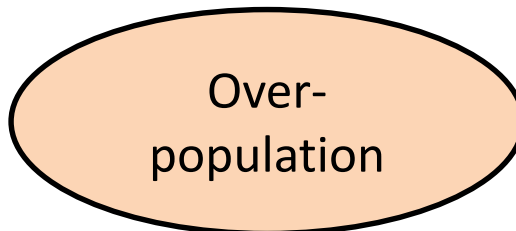
Collective overuse of natural  
resources (NR)

Over-  
population



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Which one is the Problem?



More easily demonstrated





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The Problem:

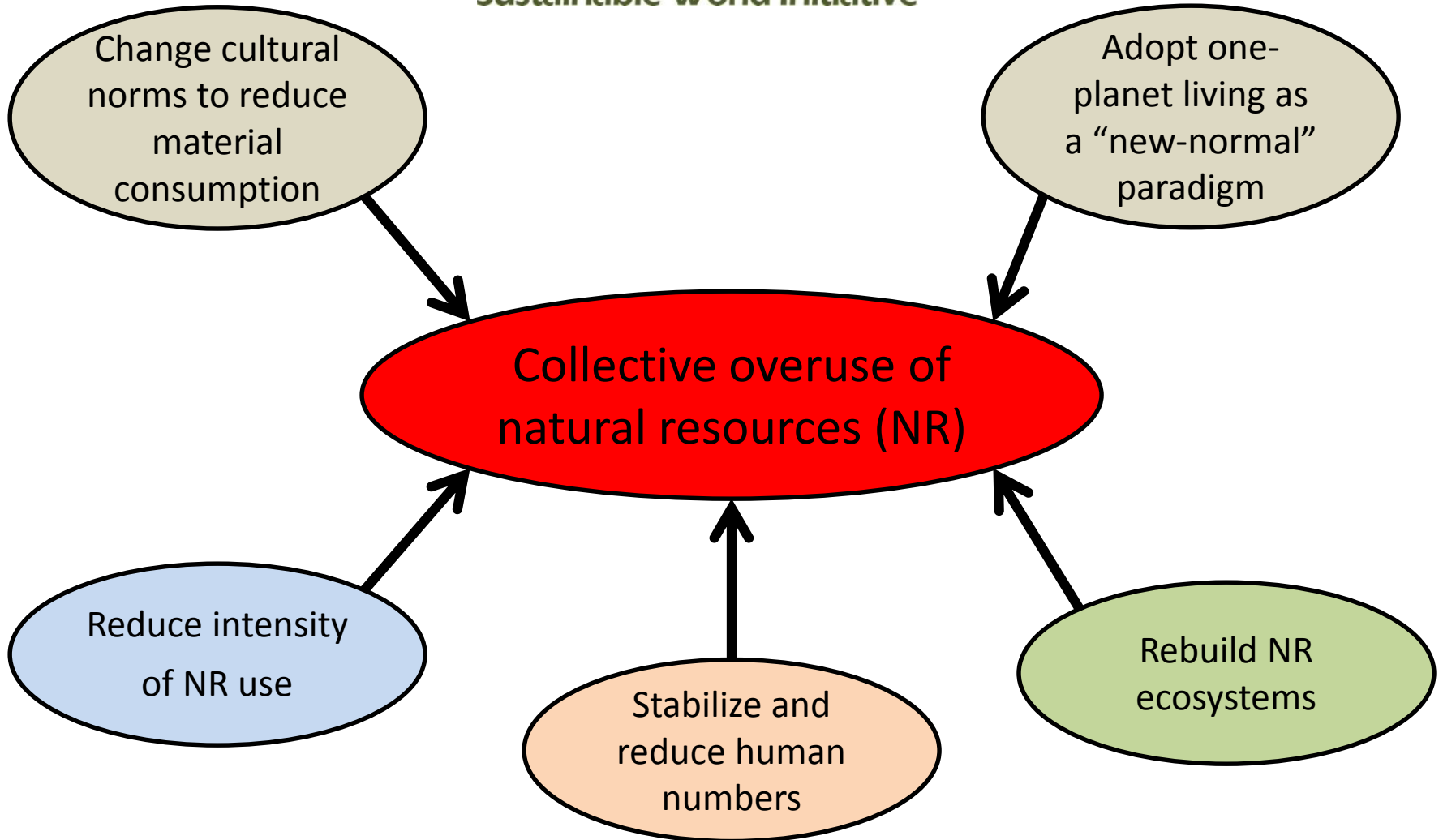
Collective overuse of natural  
resources (NR)

Framed as a solution

Stabilize and  
reduce human  
numbers

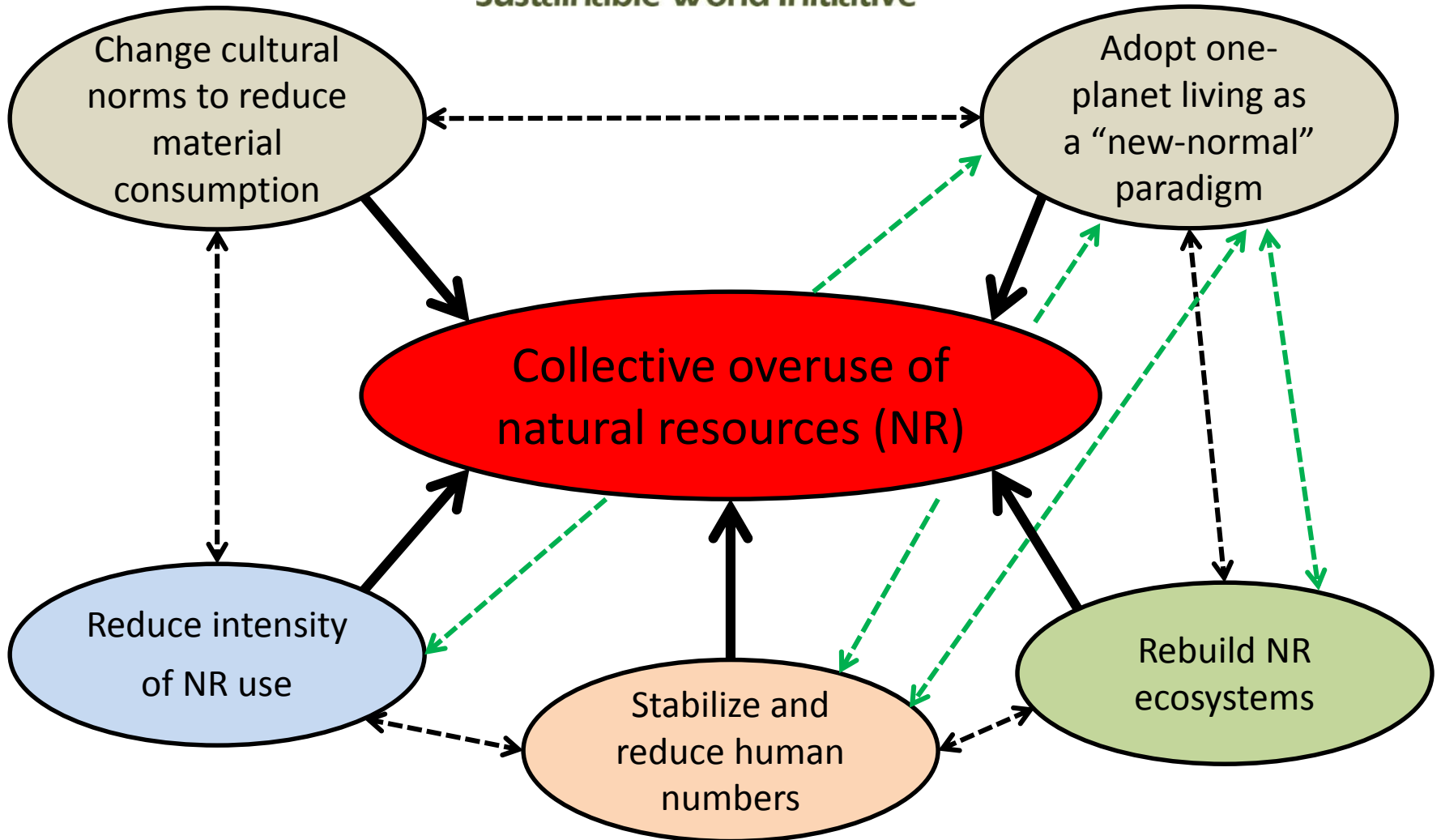


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## *Issue Framing*

**The Over-arching Problem:** Humanity is collectively over-exploiting the planet's natural resources

- Associated Policy Deficits:**
- No one is being held accountable for this collective over-consumption
  - National development plans often do not consider the full quantity of natural resources needed to support societal development aspirations



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## *Issue Framing*

### Related challenges:

- Global governance is limited to voluntary compliance
- Change will ultimately be driven by the contemporary political mandate not physical necessity
- There is no political mandate for change



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## *Issue Framing*

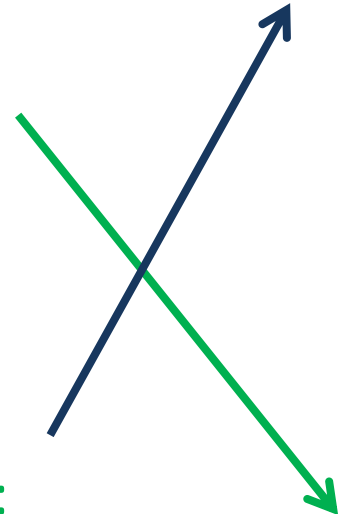
The political vs. reality mandate: A perverse relationship

The political mandate says:

Grow the human endeavor to achieve greater prosperity

The reality mandate (and bio-physical science) says:

Reduce the scale of the human endeavor to fit within planetary boundaries







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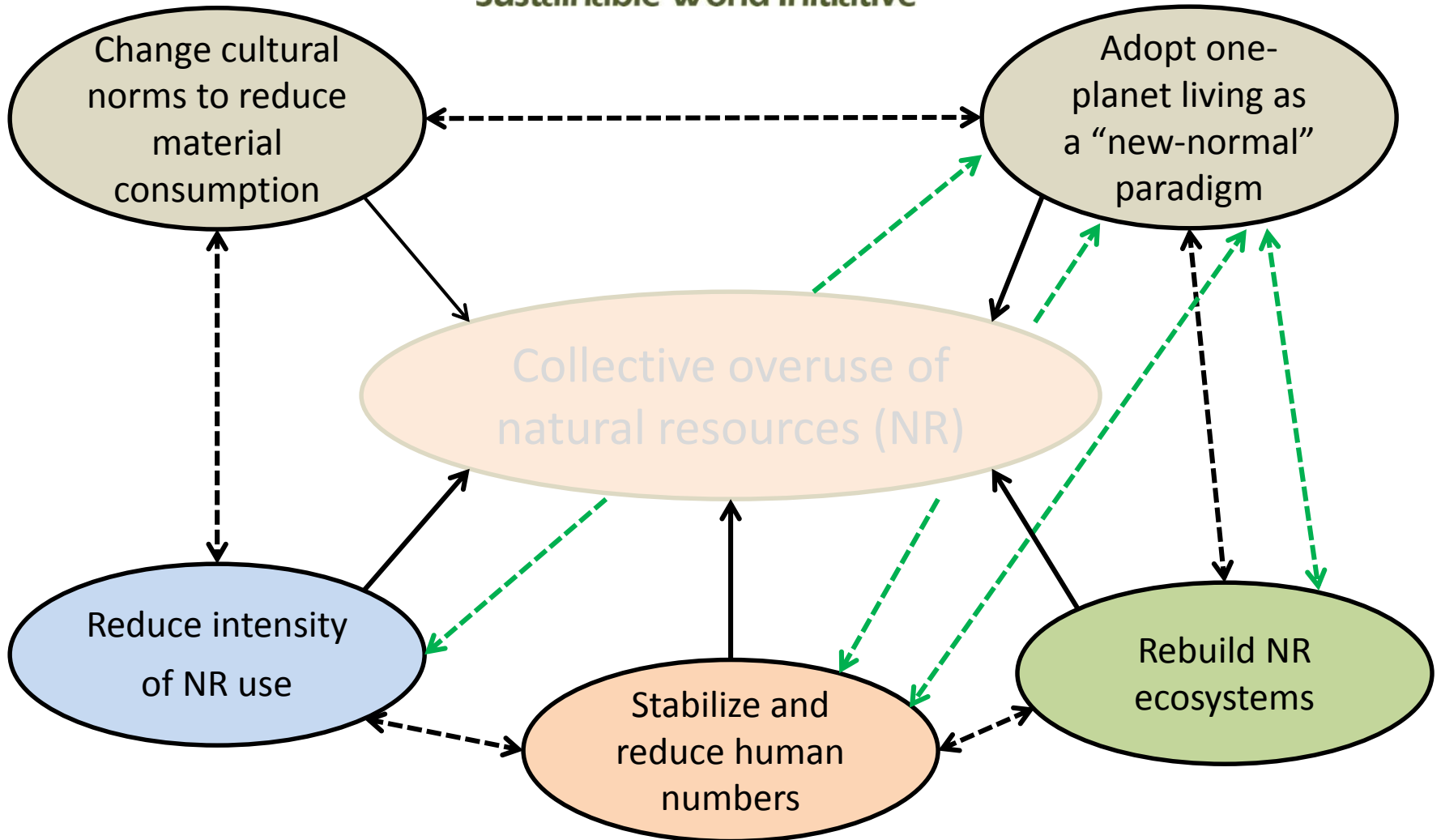
## *Issue Framing*

### Related conditions:

- The collective over-consumption challenge is hard to see
- Development processes usually evolve more slowly than human induced changes in the bio-physical world
- The global overshoot challenge is getting larger not smaller

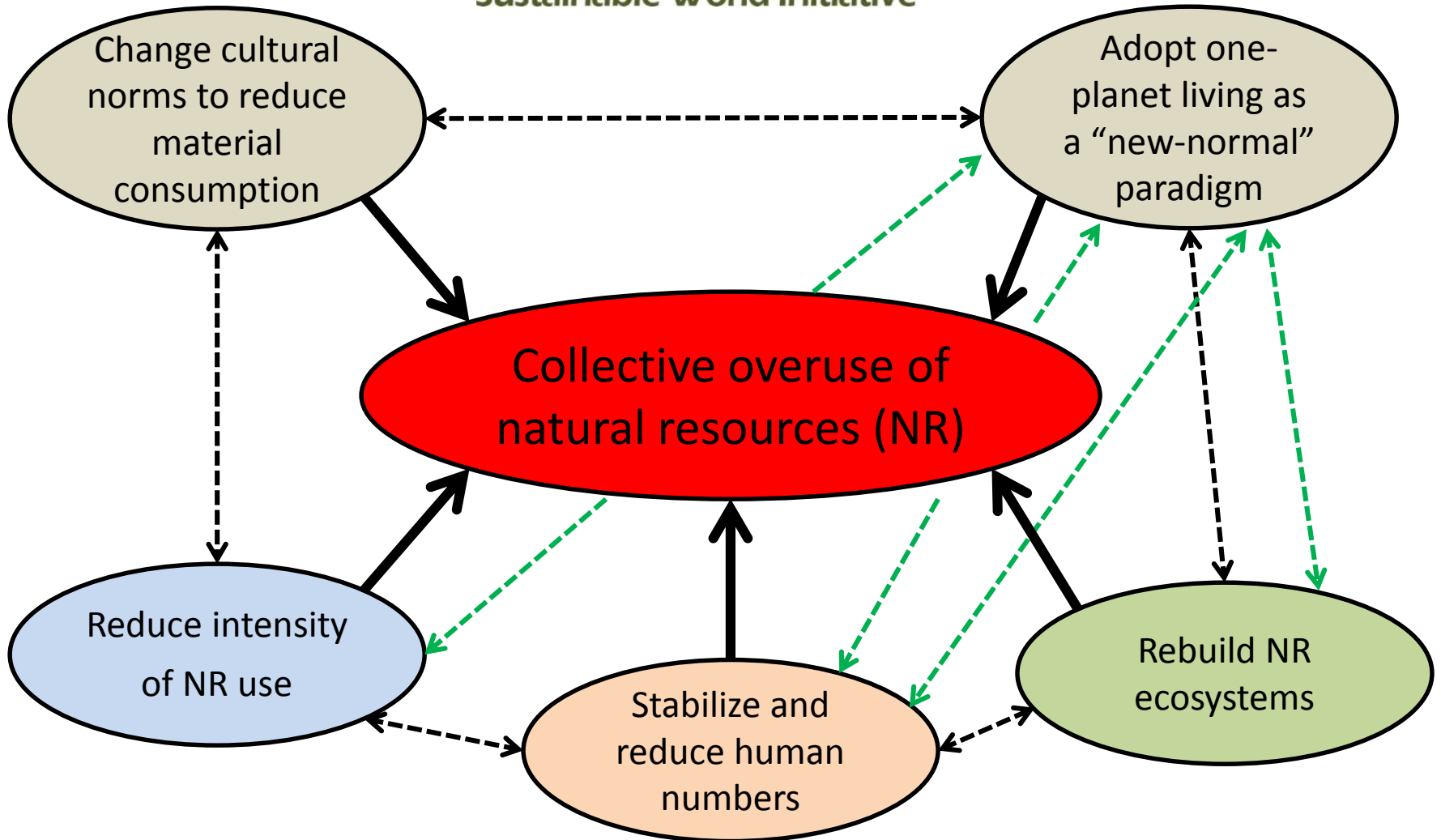


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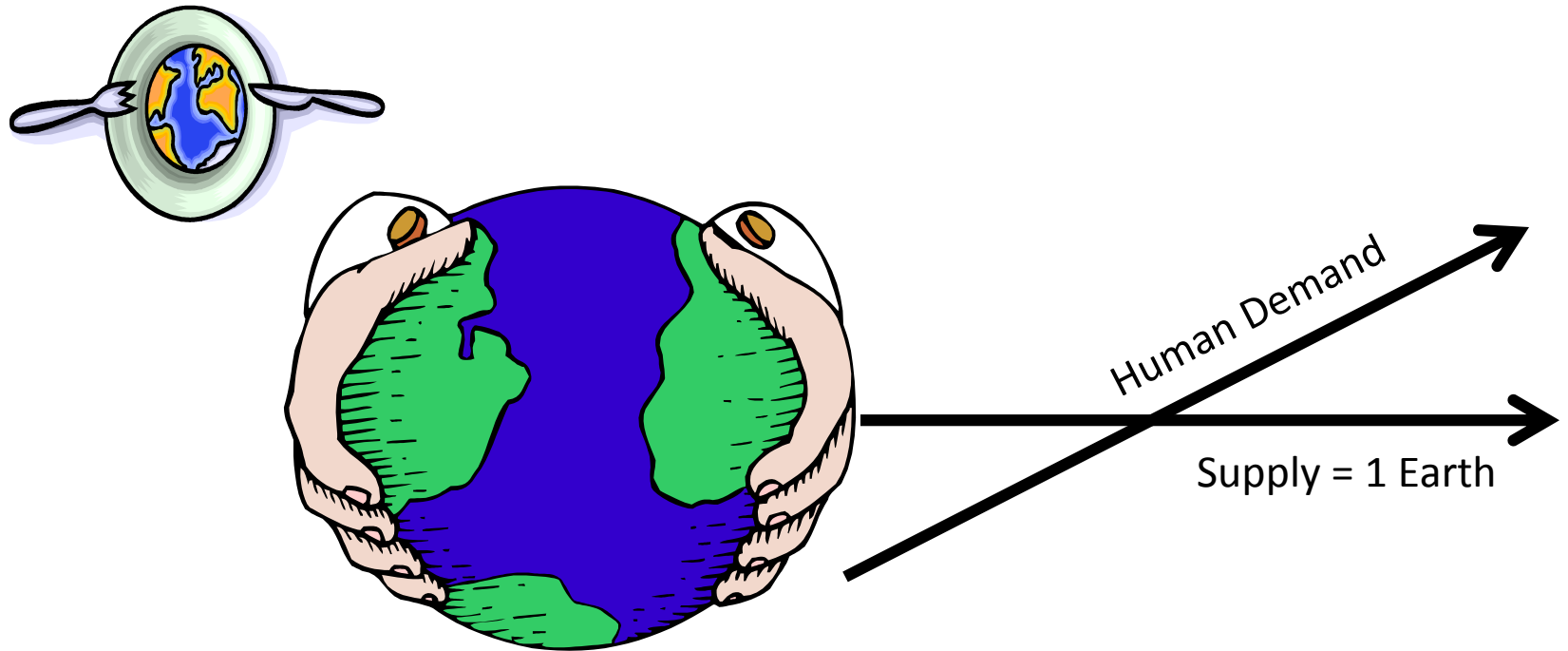


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**Today's reality: Global Resource Overshoot**



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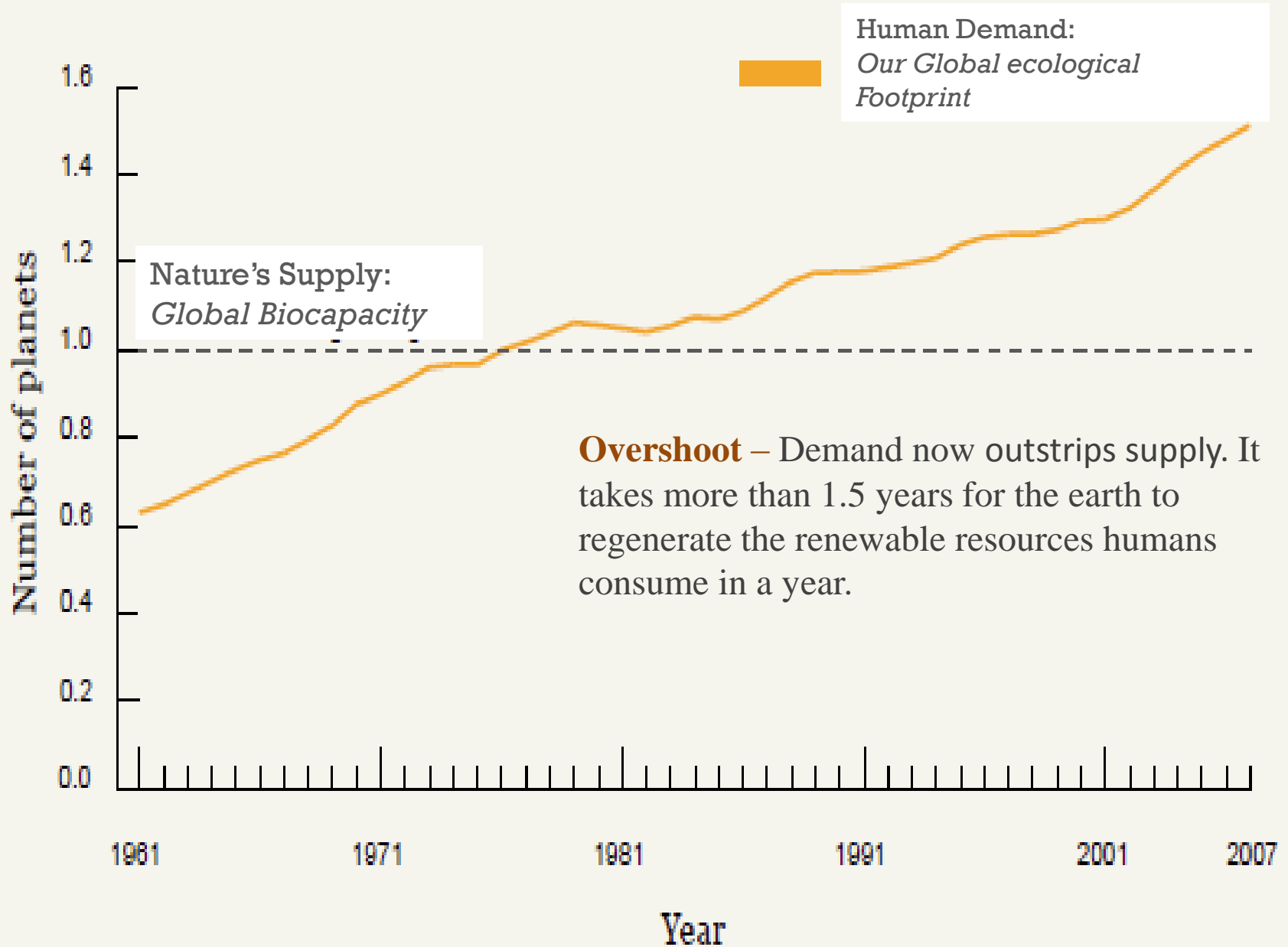
## How do we know we are

- living beyond our resource means?
  - exceeding global capacity?
- experiencing resource overshoot?



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1. Observation of the Earth's Ecological Systems
2. Financial analysis that includes natural capital accounting
3. Ecological footprint accounting





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*Research, education, and policy guidance for a better global future.*

“We must act now to halt the alarming pace of climate change and environmental degradation, which pose unprecedented threats to humanity.”

--- UN High-level Panel of Eminent Persons  
on the Post-2015 Development Agenda

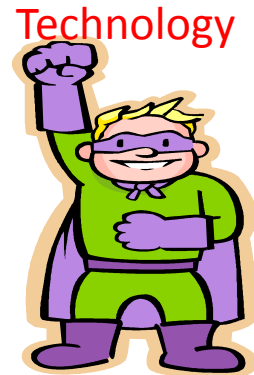




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Typical responses to the over-arching  
problem of over-shoot:

- The techno-fix



- Social equity and redistribution



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## *Response to technology optimism*

**Greening the economy** is necessary, but not sufficient.



**William Stanley Jevons**

1865 – English Economist

In economics the **Jevons paradox** is the proposition that technological progress that increases the efficiency with which a resource is used **tends to increase** (rather than decrease) the rate of consumption of that resource. Jevons observed that technological improvements that increased the efficiency of coal use led to increased consumption of coal in a wide range of industries. He argued that, contrary to intuition, technological improvements could not be relied upon to reduce fuel consumption.



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***Resource efficiency improvement*** is not the answer  
to the sustainability challenge.

***It is necessary, but not sufficient!***



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***Redistribution*** is important for social sustainability  
but the numbers don't support a global average  
level of affluence that is politically acceptable.

Global resource “over-shoot” may be controversial -  
but there is no question that humanity’s aggregated  
impact is growing and jeopardizing opportunities for  
future generations

# The Big Picture



global biocapacity:  
**12.0 billion hectares**

current human eco-footprint:  
**18.0 billion hectares**



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# Resource overshoot does not deny the right to development!

- Smarter/“greener” development
- Pay more attention to natural resources as a critical ‘means of implementation’ for human development in the 21<sup>st</sup> century



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## **Our answer**

Incorporate natural resource accountability into national development plans

## **Policy Mechanism**

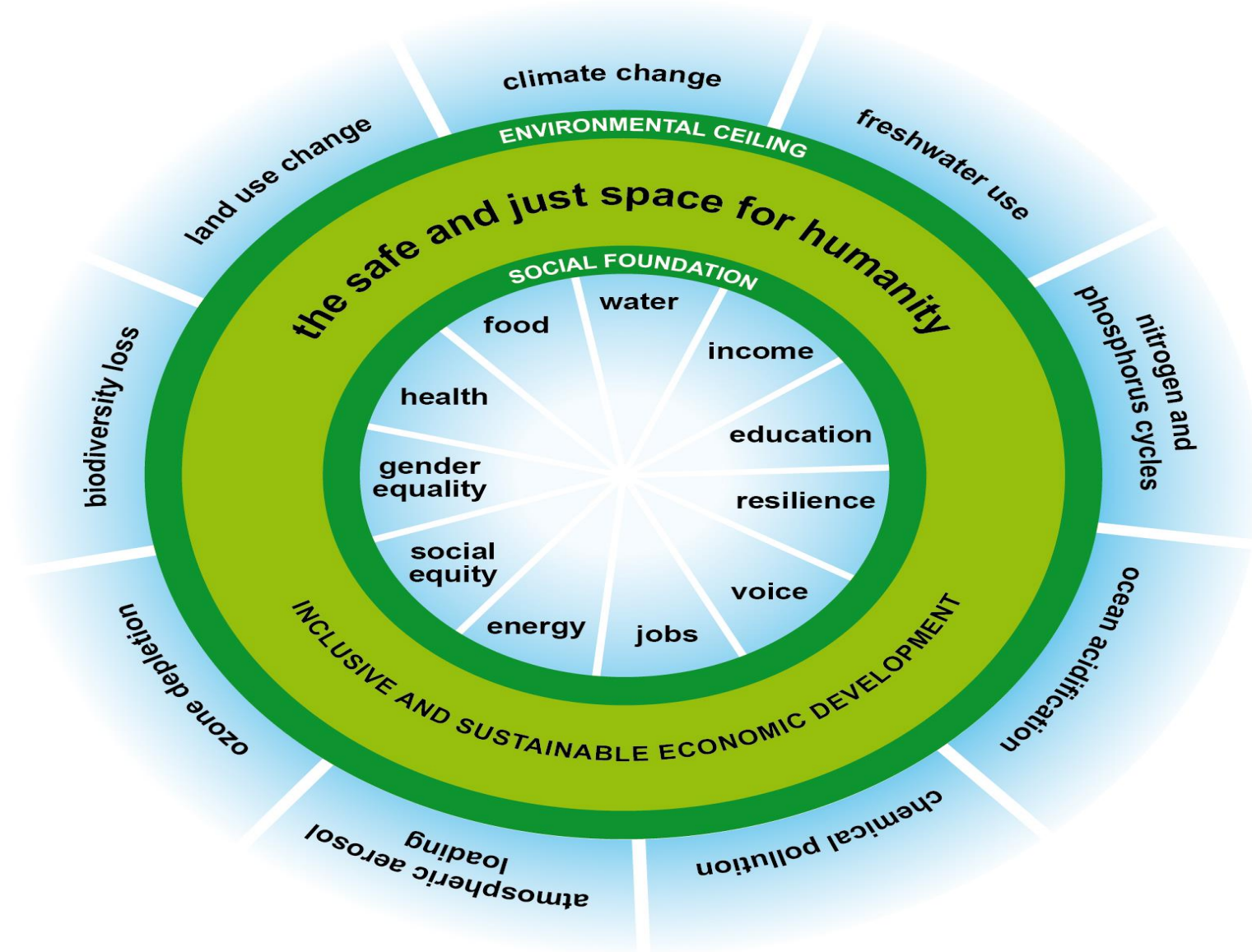
Resource Sufficiency Evaluation (RSE)





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Sustainability conceptually describes an economy and full set of societal endeavors, the demands of which are in equilibrium with basic ecological and resource support systems





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$$R_{\text{(total)}} - R_{\text{(biodiversity)}} - R_{\text{(resiliency)}} = \text{SOS}$$



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## Resource *Sufficiency* Evaluation (RSE)

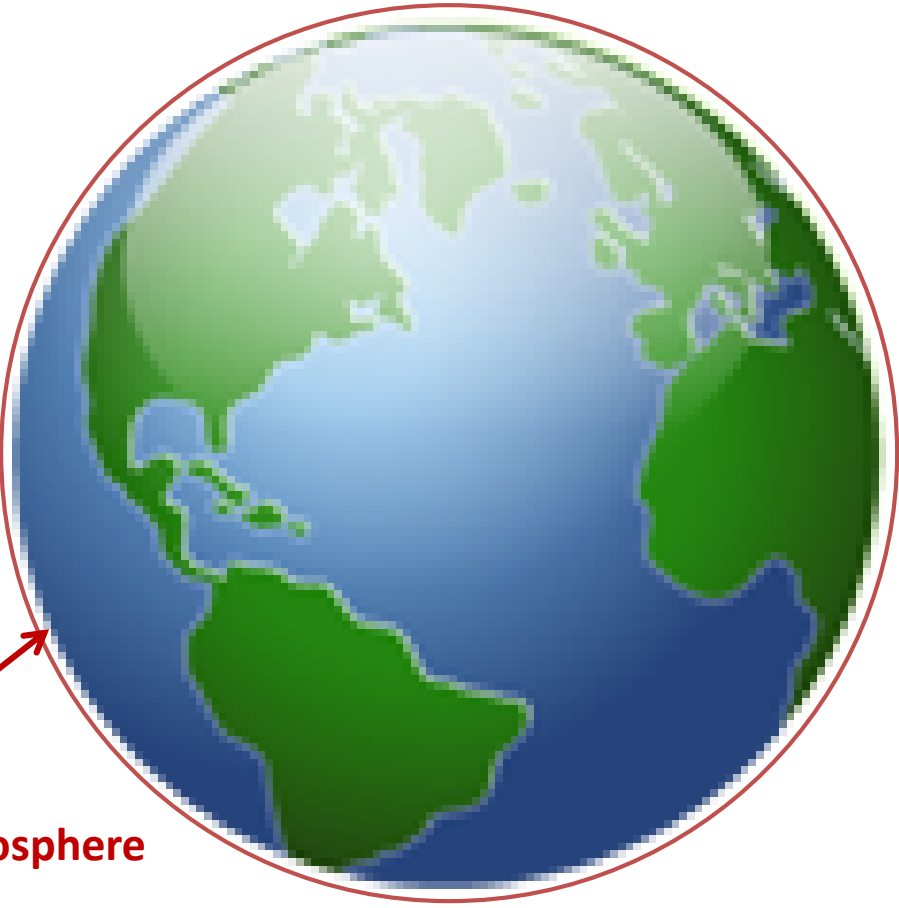
What is sustainability?





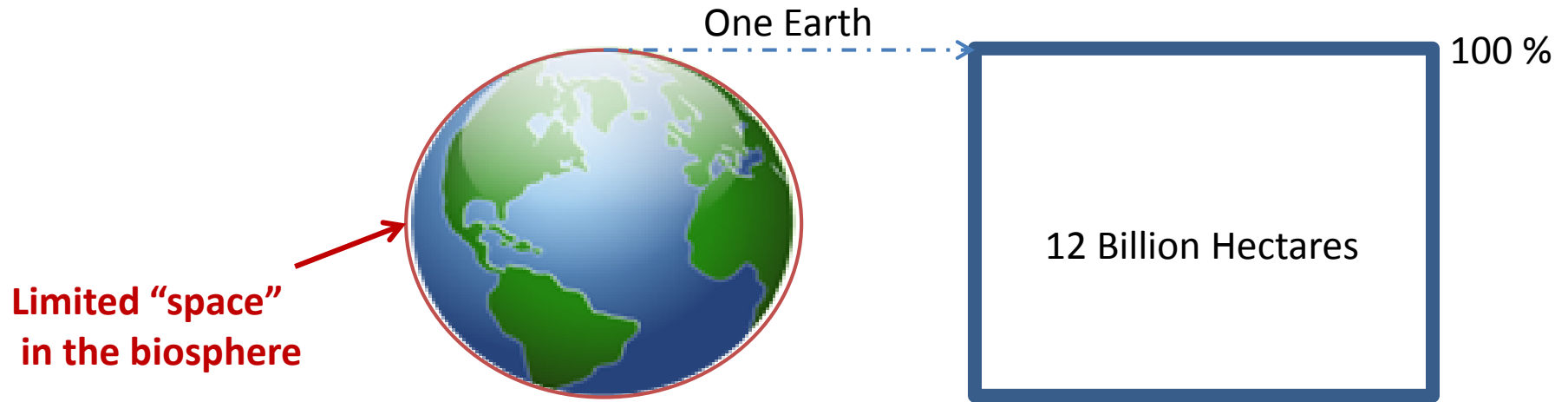
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$$\begin{aligned} & R_{\text{(food)}} + R_{\text{(fiber)}} + R_{\text{(building materials)}} \\ & + R_{\text{(energy biomass)}} + R_{\text{(carbon sequestration)}} \\ & + R_{\text{(land development)}} \\ & + R_{\text{(waste assimilation/ecosystem maintenance)}} \\ & < \text{SOS} \end{aligned}$$

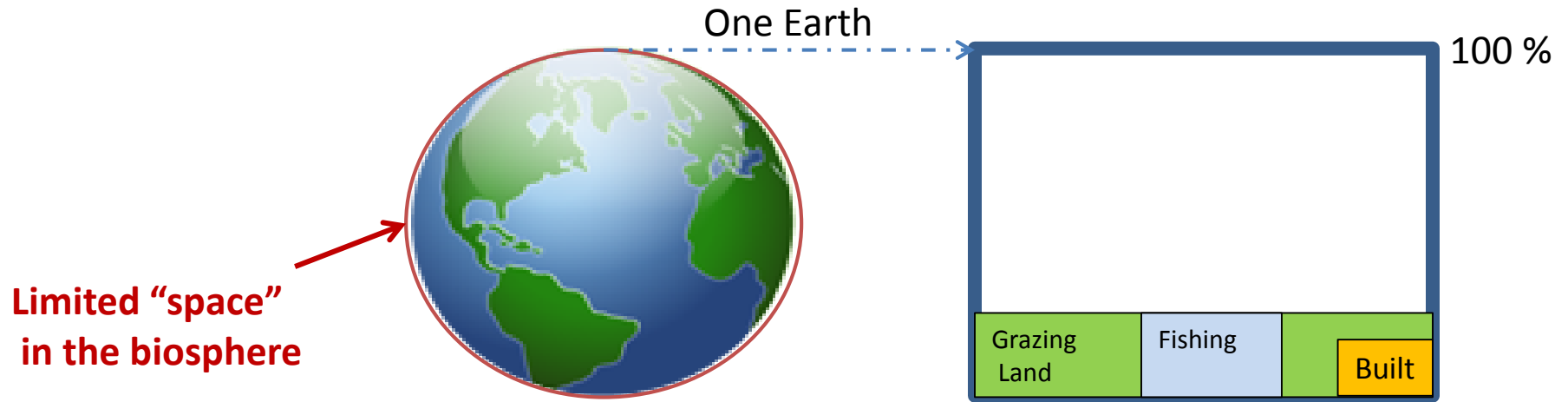


Limited "space" in the biosphere

How does humanity use the planet's bio-productive "space?"

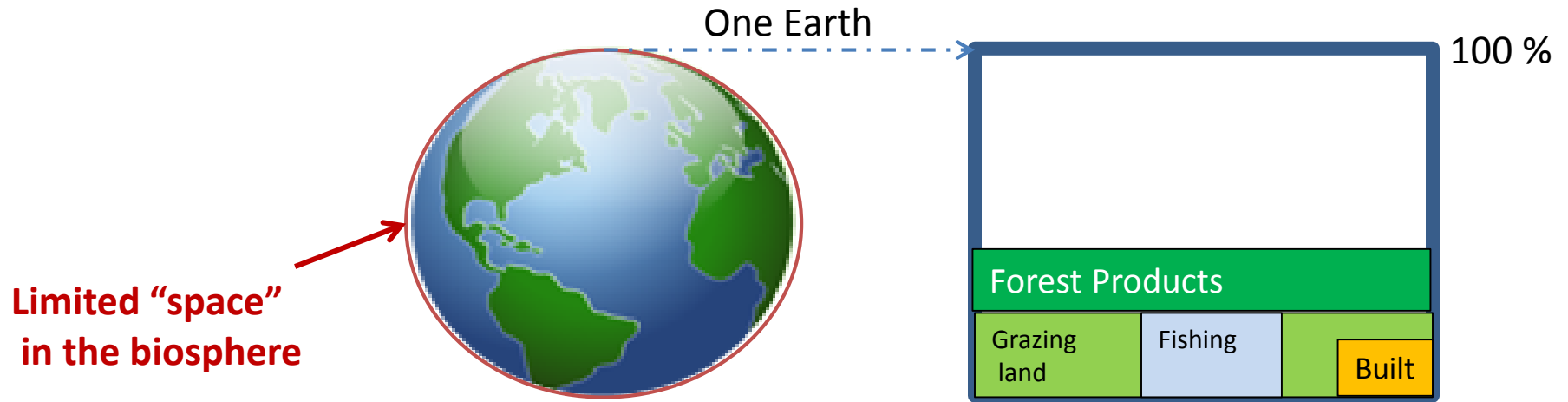


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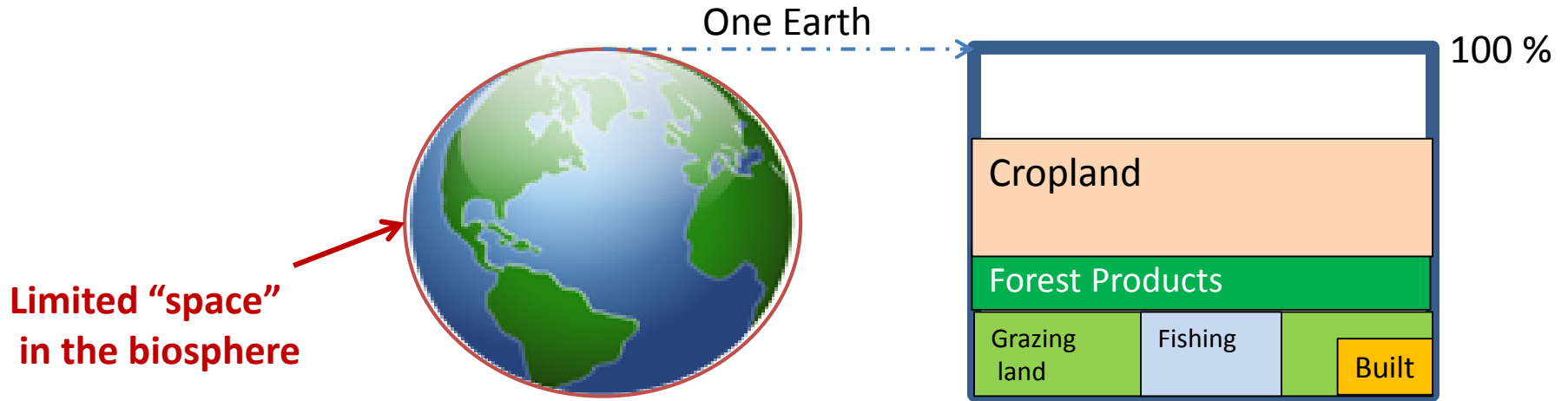




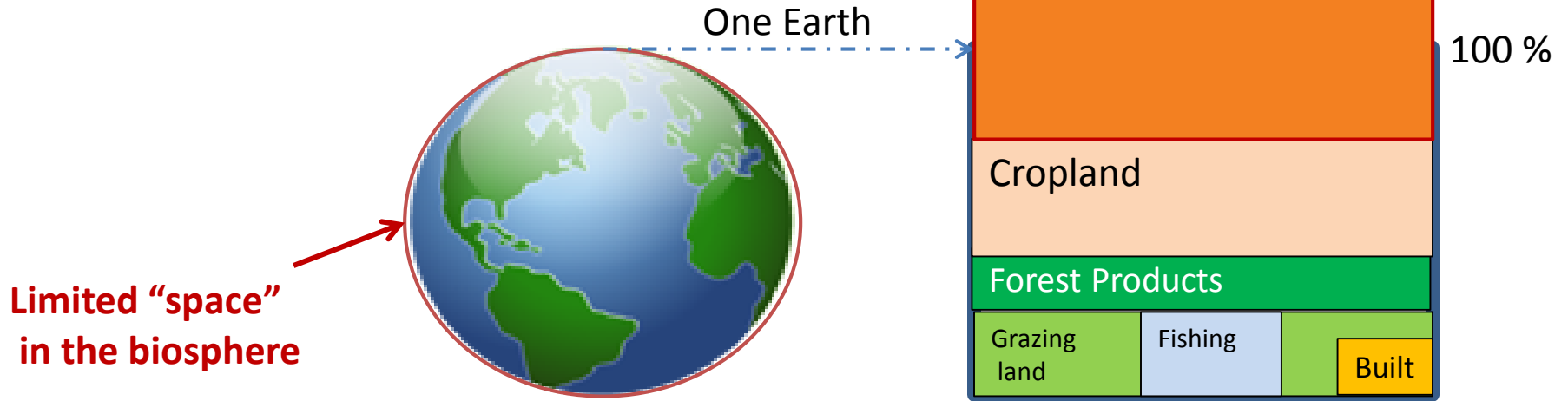
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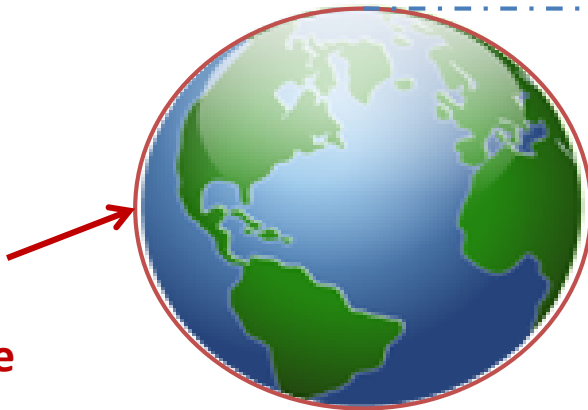


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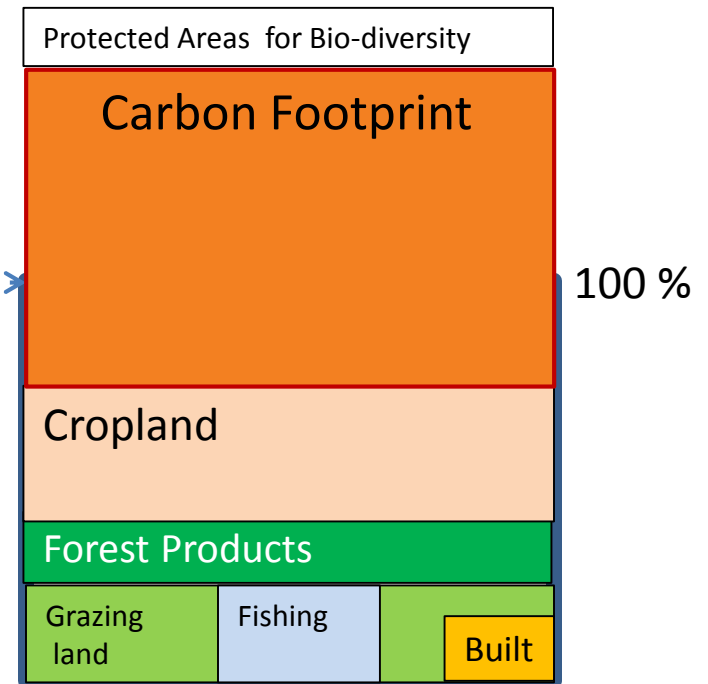


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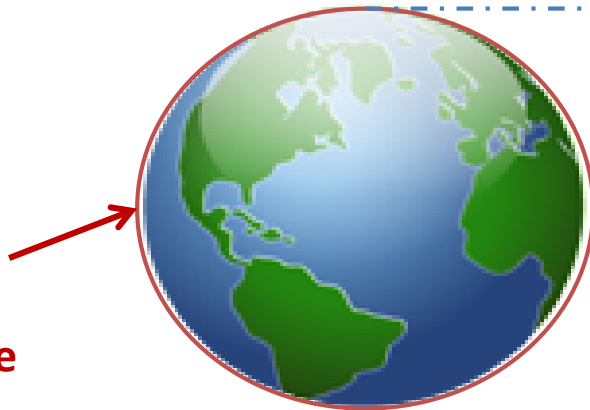


One Earth



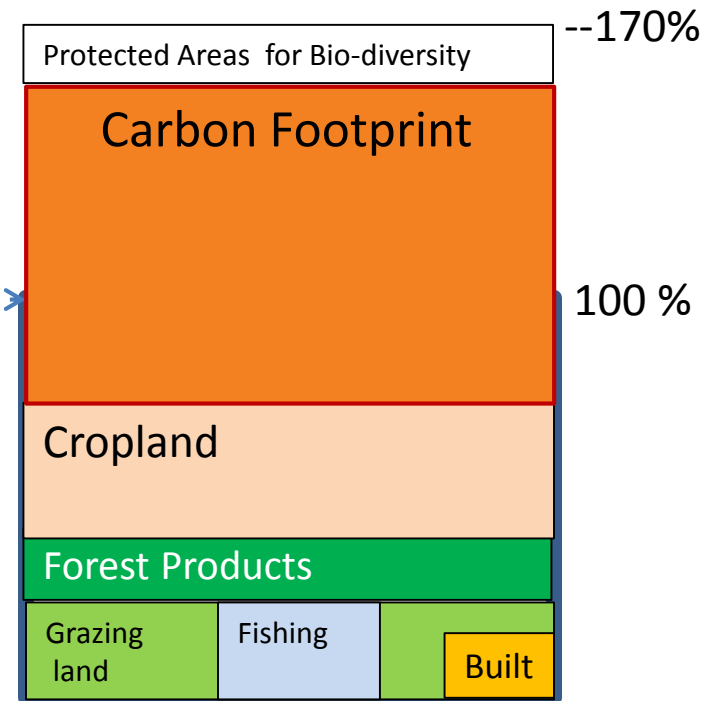
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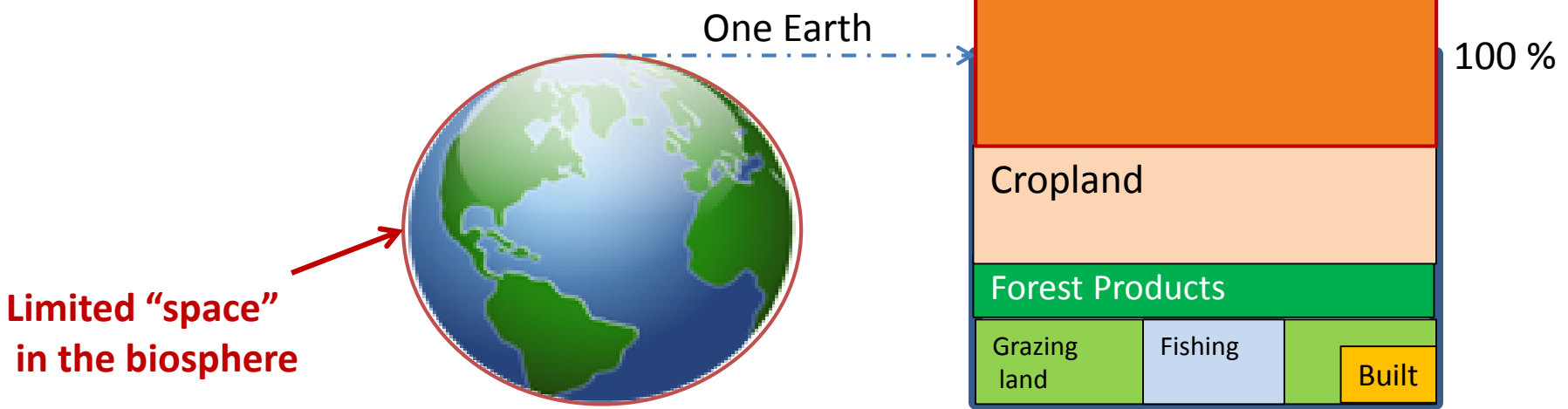
One Earth

### Current Situation



# “The World We Want” (Aspirational Human Development)

How does humanity use the planet’s bio-productive “space?”





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Global Development Agenda

**Goal #1**

***Eradicate Global Poverty***

# Ending global poverty requires additional natural resources



- Food (and good nutrition)
- Clothing
- Fresh water/sanitation
- Basic Health Services
- Education
- Jobs



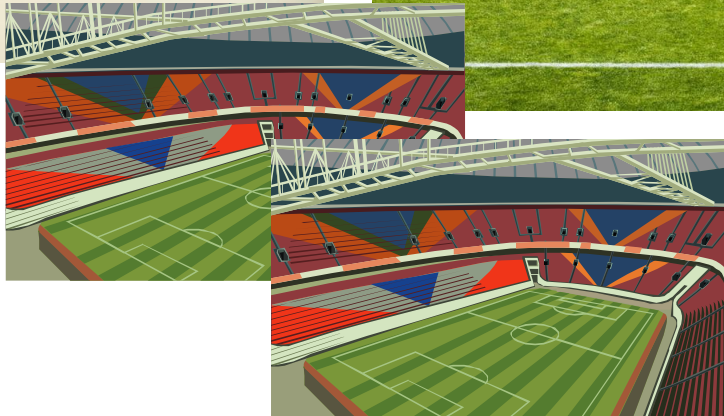
Economic goods and services



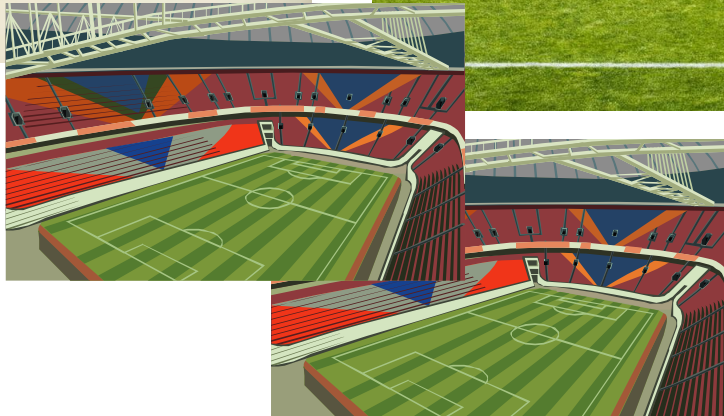
Natural resource goods and eco-system services



## Minimum Sufficiency Living



## Minimum Sufficiency Living



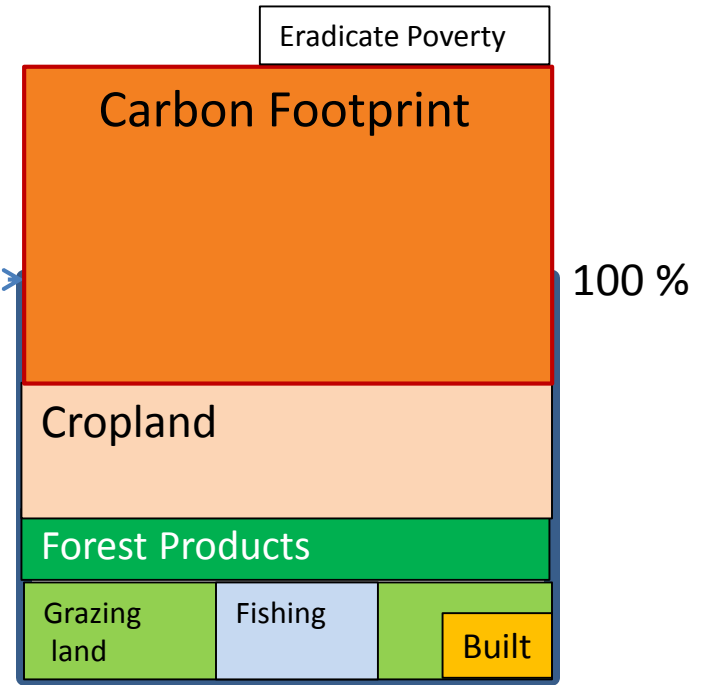
1 – 1.5 global hectares of space  
in the bio-sphere

# “The World We Want” (Aspirational Human Development)

How does humanity use the planet’s bio-productive “space?”



One Earth

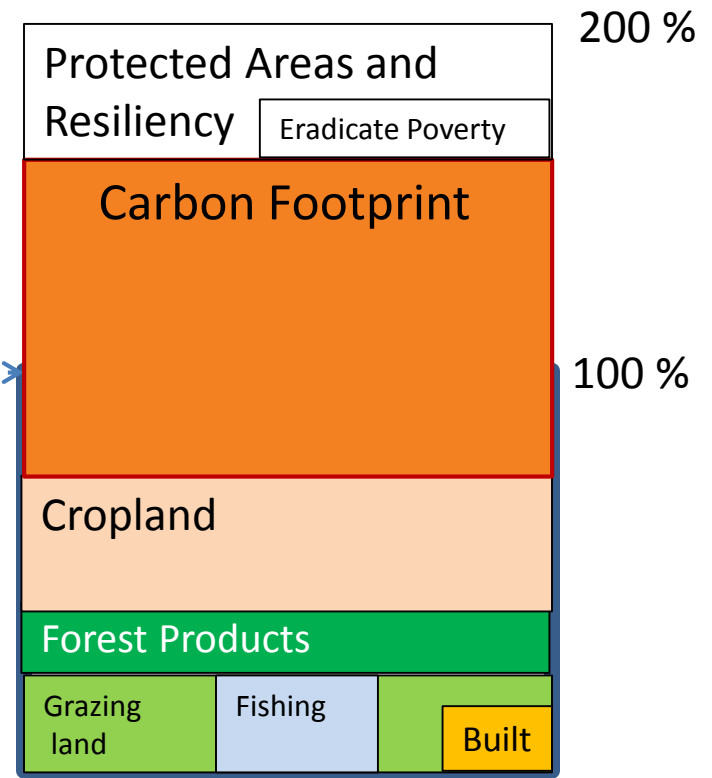


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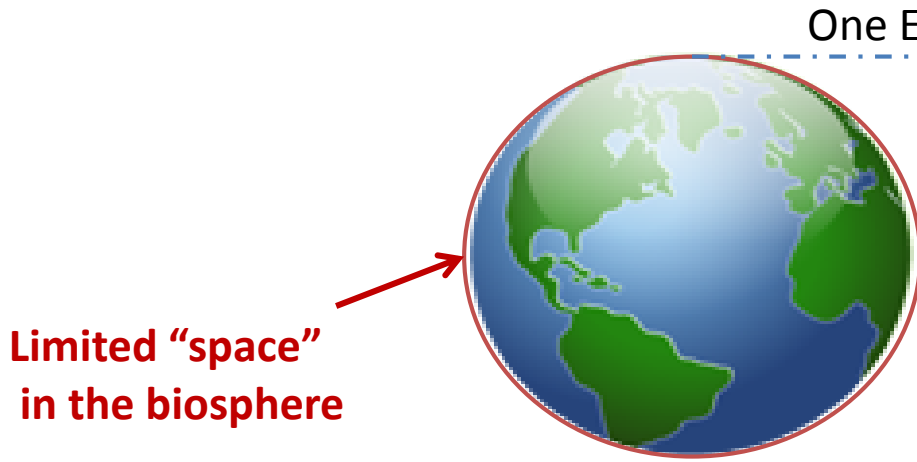


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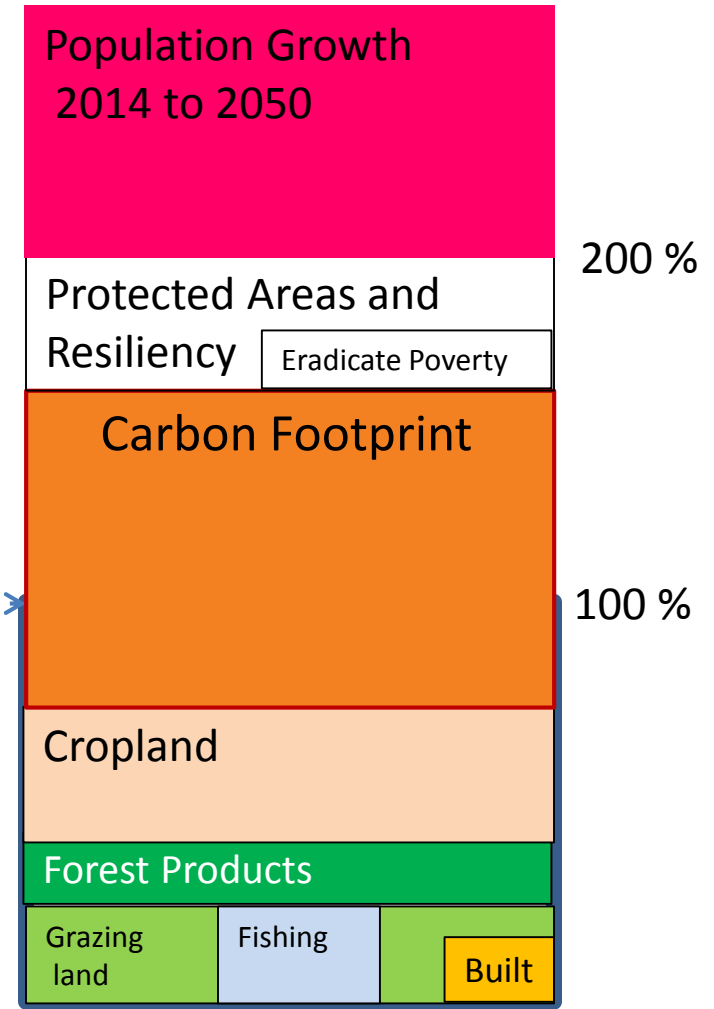


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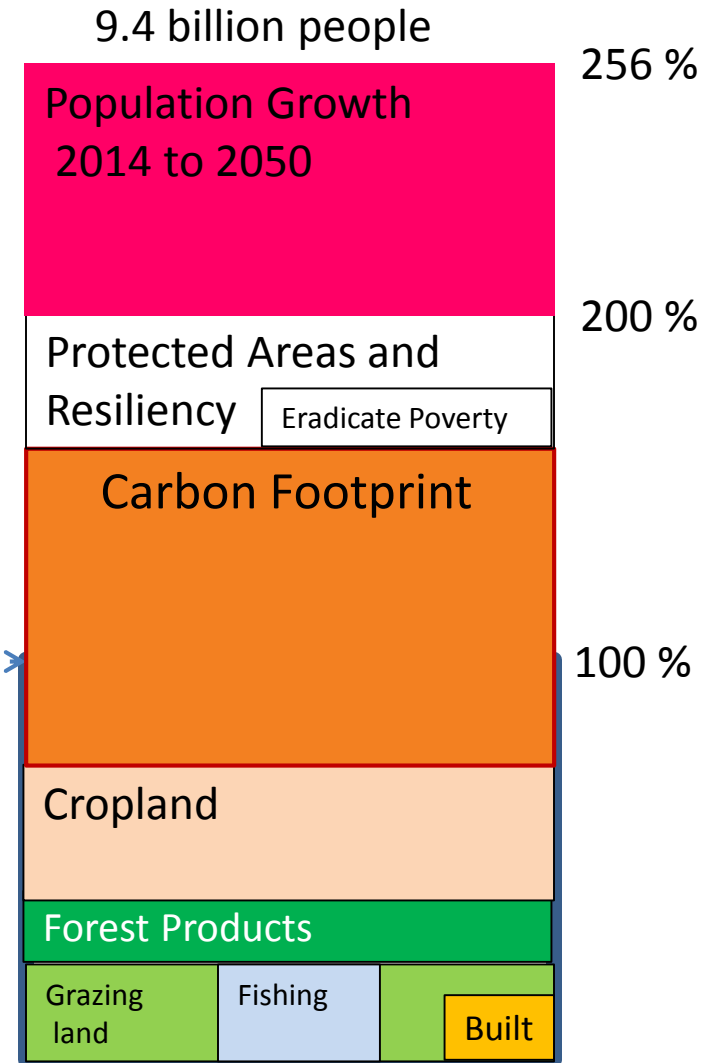
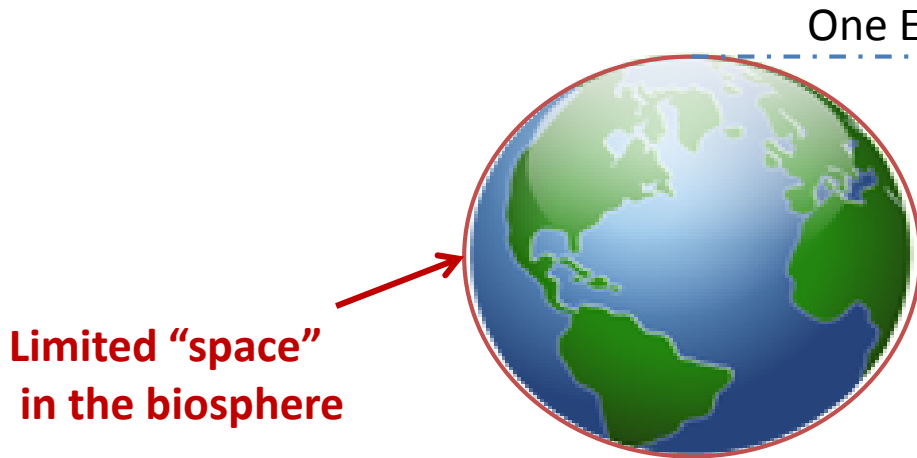


One Earth



# “The World We Want” (Aspirational Human Development)

How does humanity use the planet’s bio-productive “space?”





Limited “space” in the biosphere is arguably  
the greatest challenge to achieving  
durable human development  
in the 21<sup>st</sup> century

**Sustainable human population = 2.5 - 3.0 billion**

[ SOS is 7.8 B gha divided by 2.8 gha/person = 2.8 B people ]

National planning models should:

- be fully integrated analytical and scenario planning tools
- include aggregated ecological ‘footprint’ accounting
- help P&D ministers understand their NR assets & vulnerabilities
- demonstrate the sustainability of their development plans



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## A universal SDG Target: calling for natural resource accounting

- All nations should conduct natural resource sufficiency evaluations at the country level, produce annual material resource “balance sheets,” and integrate this information into their national plans for achieving sustainable production and consumption.





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## Resource *Sufficiency* Evaluation (RSE)

Our road map to a sustainable future.

Thank you

(additional information available)

End

PS: This global development agenda also calculates out to about 2.5 planets

**A NEW GLOBAL PARTNERSHIP:  
ERADICATE POVERTY AND TRANSFORM ECONOMIES  
THROUGH SUSTAINABLE DEVELOPMENT**

The Report of the High-Level Panel of Eminent Persons  
on the Post-2015 Development Agenda



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## A universal SDG Target: calling for natural resource accounting

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## The Global Challenge

*“How to reduce global GHGs and  
achieve more equitable and  
sustainable management of resources*

*while promoting dynamic and  
inclusive economic and human  
development.”*

...UN System Task Team on the  
Post-2015 Development agenda



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## The Global Challenge

*“How to reduce global GHGs and  
achieve more equitable and  
sustainable management of resources*

Balancing the resources we  
demand with what's available!

*while promoting dynamic and  
inclusive economic and human  
development.”*

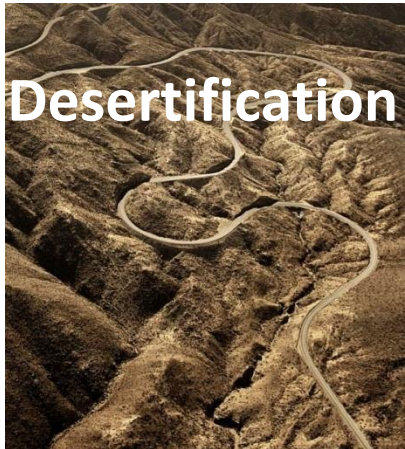
...UN System Task Team on the  
Post-2015 Development agenda

# Climate change



Witnessing  
dysfunctional  
human behavior

## Desertification



## Deforestation



Collapse of  
fisheries



Rapid  
extinction  
of species





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***Resource efficiency improvement*** is not the answer  
to the sustainability challenge.

***It is necessary, but not sufficient!***



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## Resource *Sufficiency* Evaluation (RSE)

**Greening the economy** is necessary, but not sufficient.



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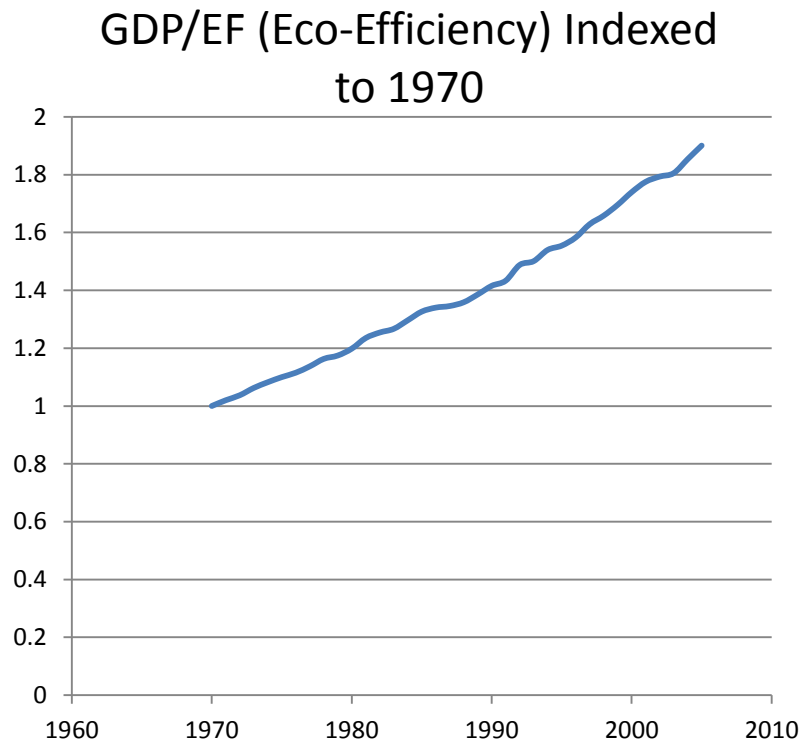




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## Resource *Sufficiency* Evaluation (RSE)

*Eco-efficiency is steadily improving*





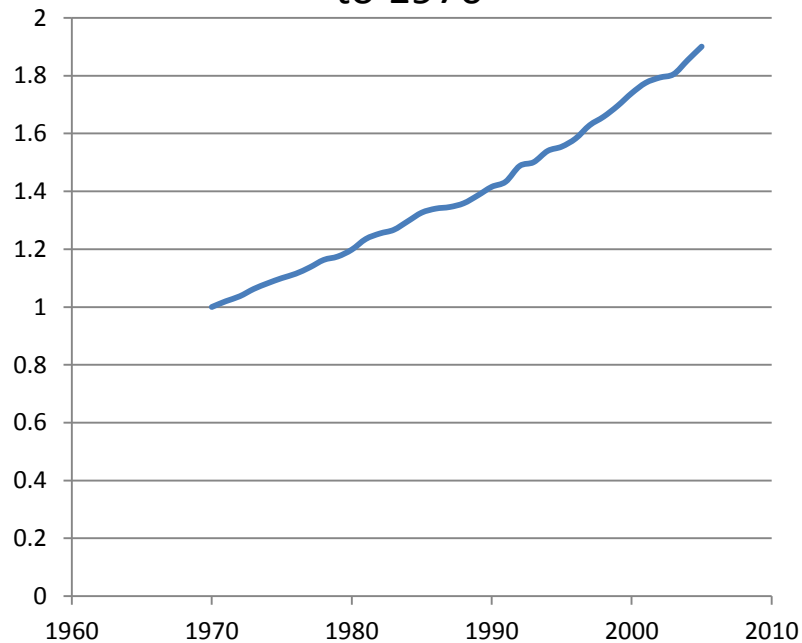
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## Resource *Sufficiency* Evaluation (RSE)

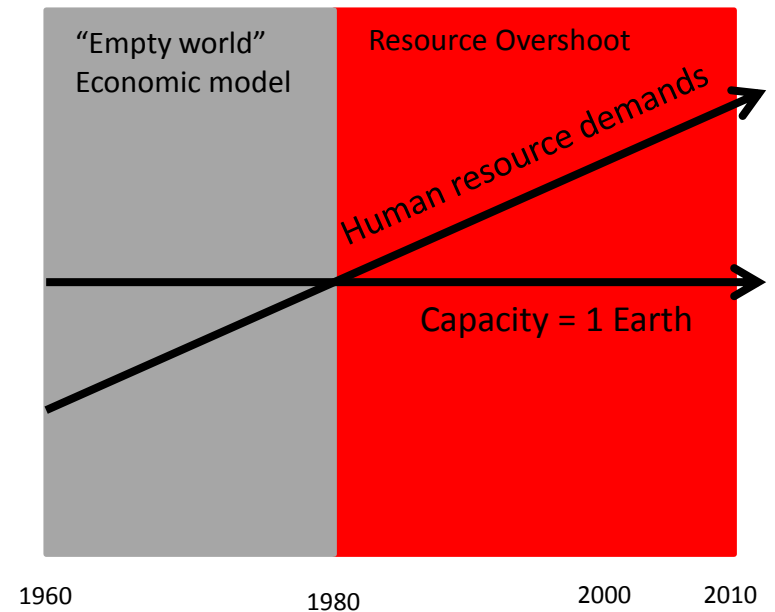
*Eco-efficiency is steadily improving*

*But resource consumption continues to grow*

GDP/EF (Eco-Efficiency) Indexed to 1970



Global Resource Overshoot





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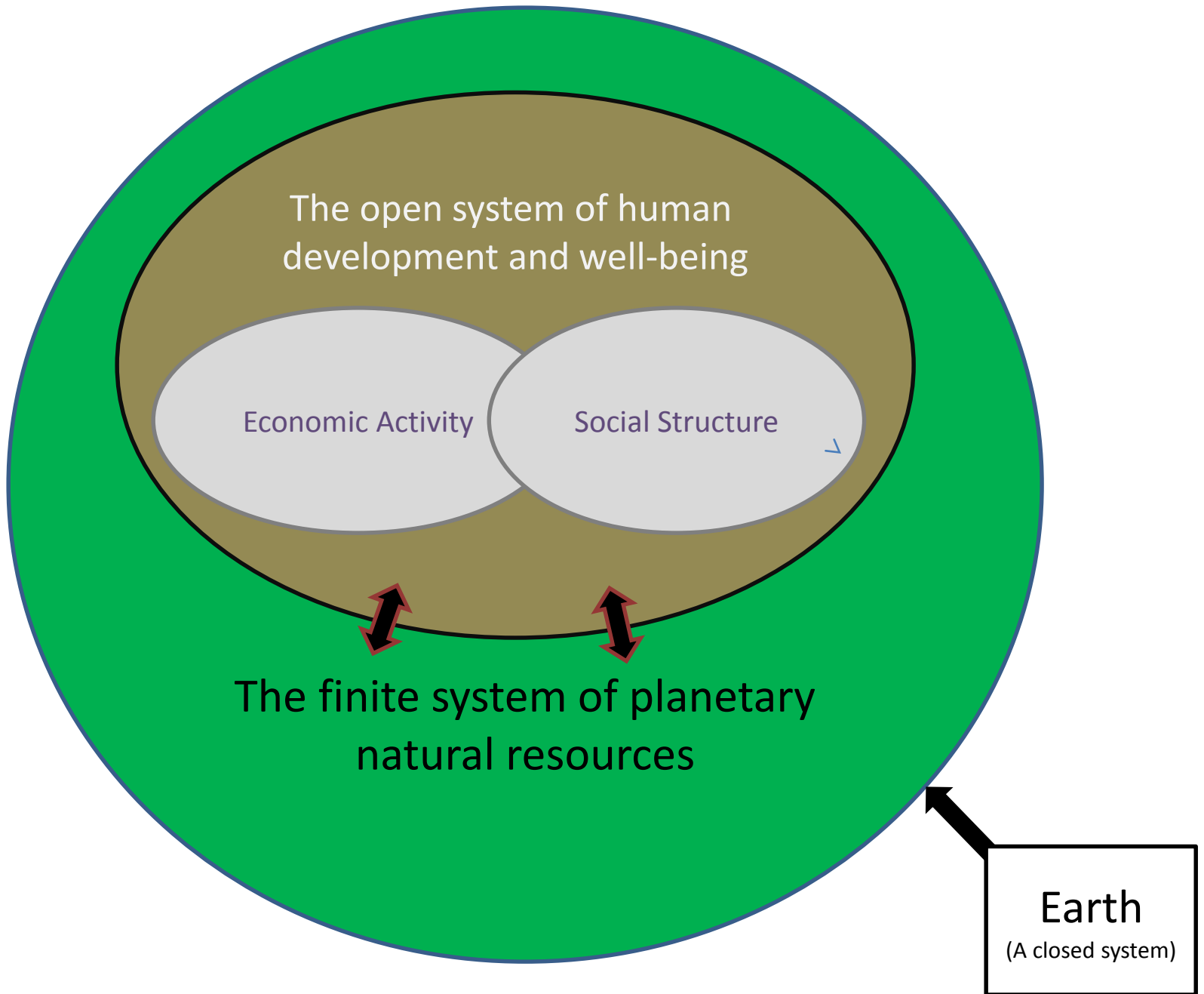
## Resource *Sufficiency* Evaluation (RSE)

**Greening the economy** is necessary, but not sufficient.

While green technologies may help to de-link resource extraction from economic growth, they will not ensure progress towards sustainability.

# Solutions

1. Change the political mandate from economic growth to shared economic development within planetary limits.
2. Increase media attention to population and sustainability issues and serial dramas for behavioral change.
3. *Incorporate resource sufficiency evaluation (RSE) and reporting into national and global governance.*



The open system of human development and well-being

Economic Activity

Social Structure

The finite system of planetary natural resources

Earth  
(A closed system)



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## Resource *Sufficiency* Evaluation (RSE)

What does RSE look like?



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## Resource *Sufficiency* Evaluation (RSE)

What does RSE look like?

Bio-physical (not economic) 'balance sheets'



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## Resource *Sufficiency* Evaluation (RSE)

What does RSE look like?

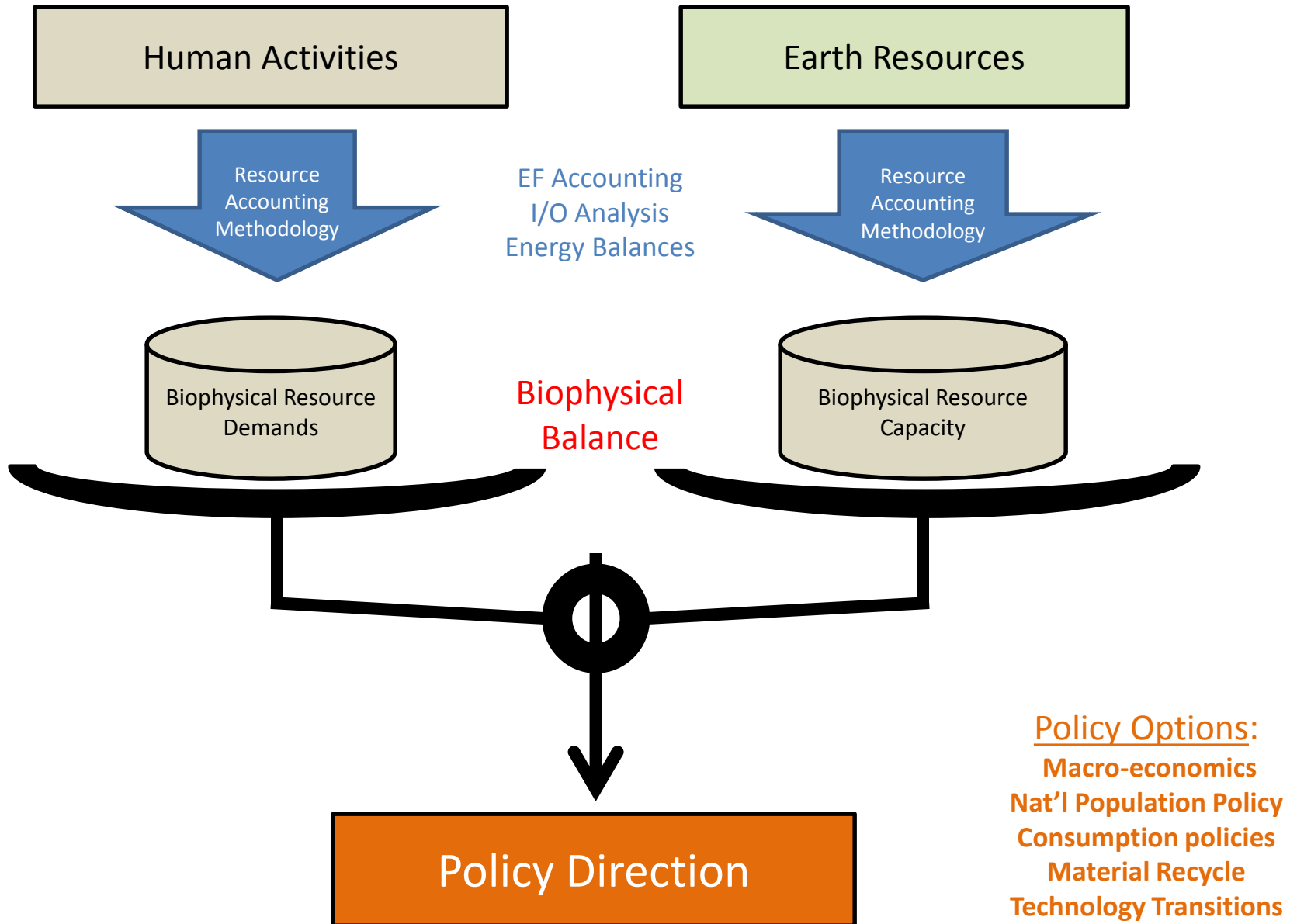
### Bio-physical 'balance sheet' accounting - Germany

Resource Category	Societal Demand	National Capacity	Surplus (Deficit)	Sustainability Rating	Measurement Units
Fresh Water	30	110	80	Sustainable	Billion cubic meters
Energy	330	130	(200)	Unsustainable	1000KT Oil Equivalent
Bio-capacity	420	160	(260)	Unsustainable	Million global hectares

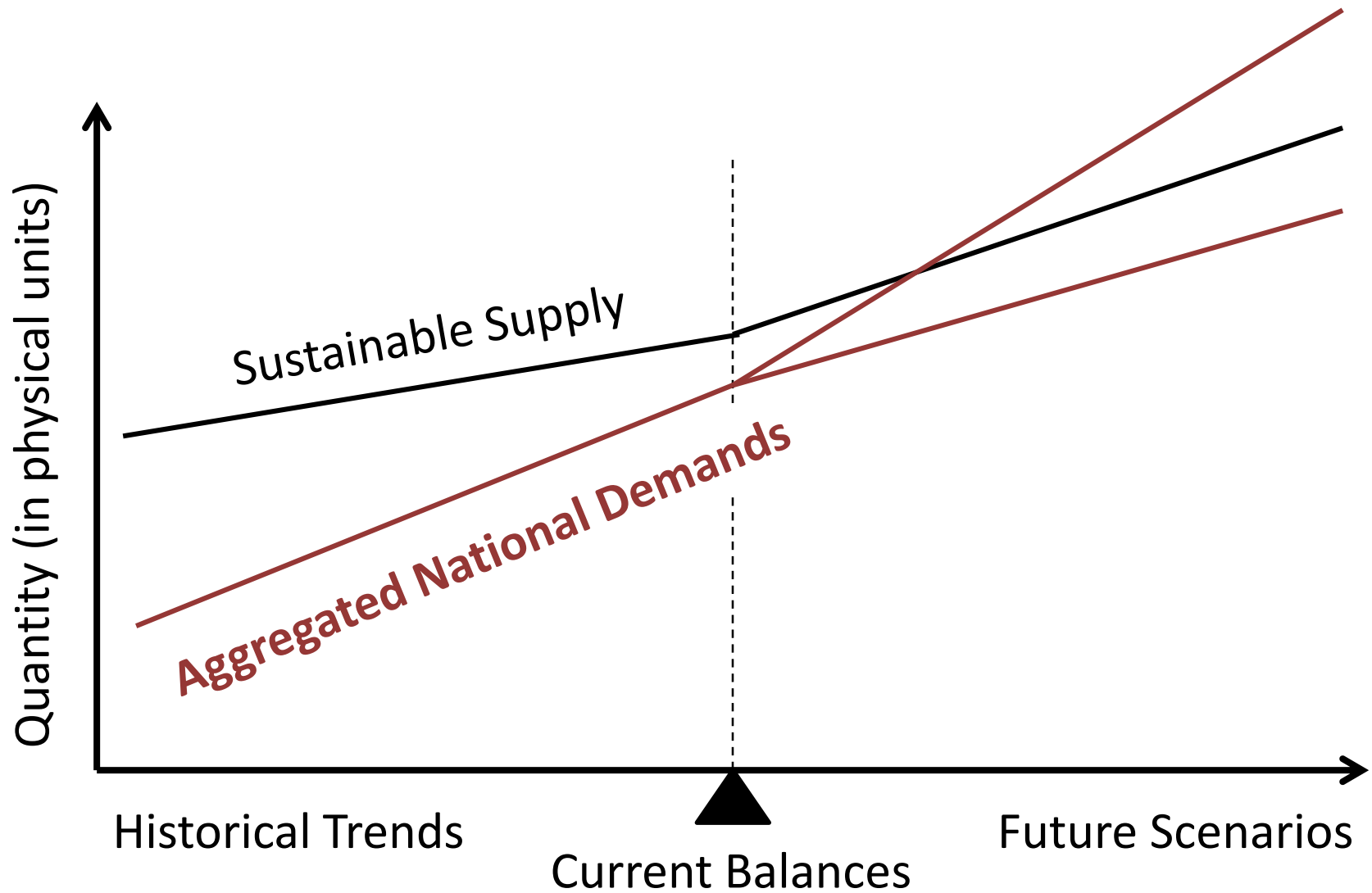


# Sustainability Assessment

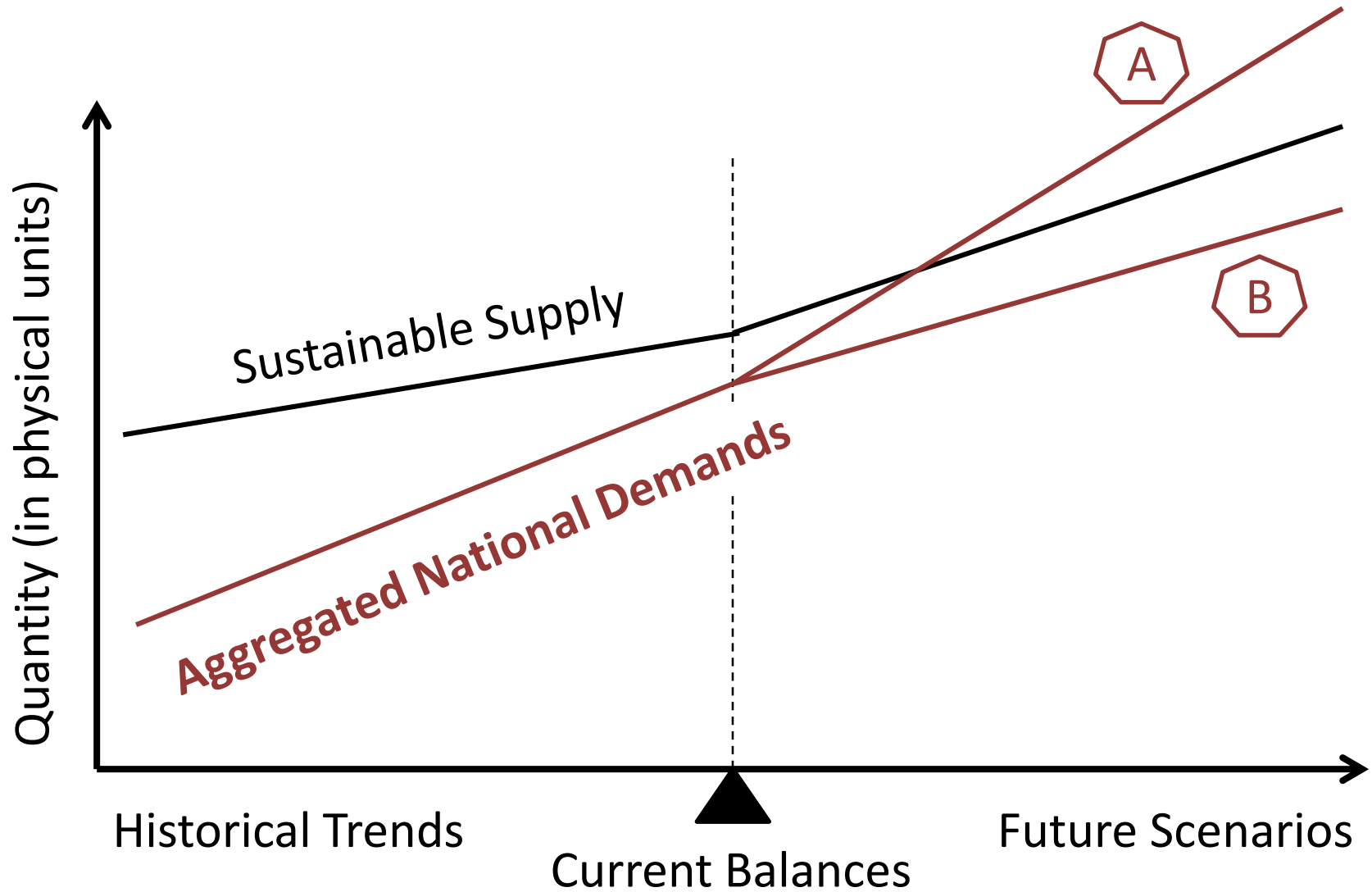
Measuring what we want to achieve



# Natural Resource Material “Balance Sheets”



# Natural Resource Material “Balance Sheets”





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## Resource *Sufficiency* Evaluation (RSE)

### Benefits

- Directly measures a critical sustainability criteria
- Measures what we need to manage in today's world and provides a clear understanding of sustainable resource use



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## Resource *Sufficiency* Evaluation (RSE)

### Benefits

- Directly measures a critical sustainability criteria
- Measures what we need to manage in today's world and provides a clear understanding of sustainable resource use
- Provides a prescriptive solution to the north-south political divide by asking all countries – both developed and developing – to evaluate, report, and make progress toward bio-physical balance
- Protects inter-generational equity



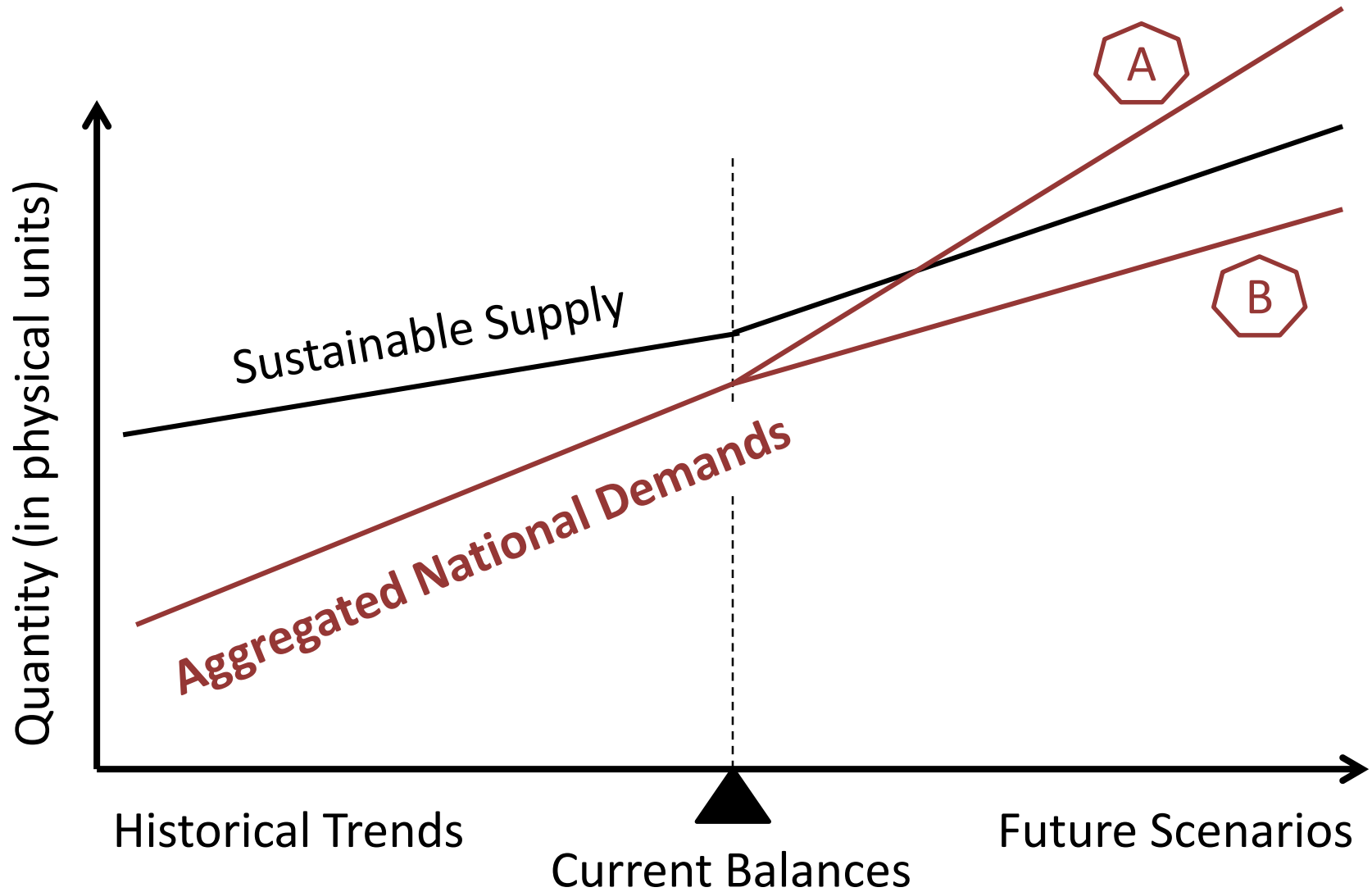
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## Resource *Sufficiency* Evaluation (RSE)

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- Provides a prescriptive solution to the north-south political divide by asking all countries – both developed and developing – to evaluate, report, and make progress toward bio-physical balance
- Protects inter-generational equity
- Builds public awareness of our universal challenge of resource system overuse
- Puts sustainability into the political discourse

# Natural Resource Material “Balance Sheets”



National planning models must directly support planning and development ministers:

- Understand their natural resource assets and vulnerabilities
- Must clearly demonstrate the sustainability of their national development plans