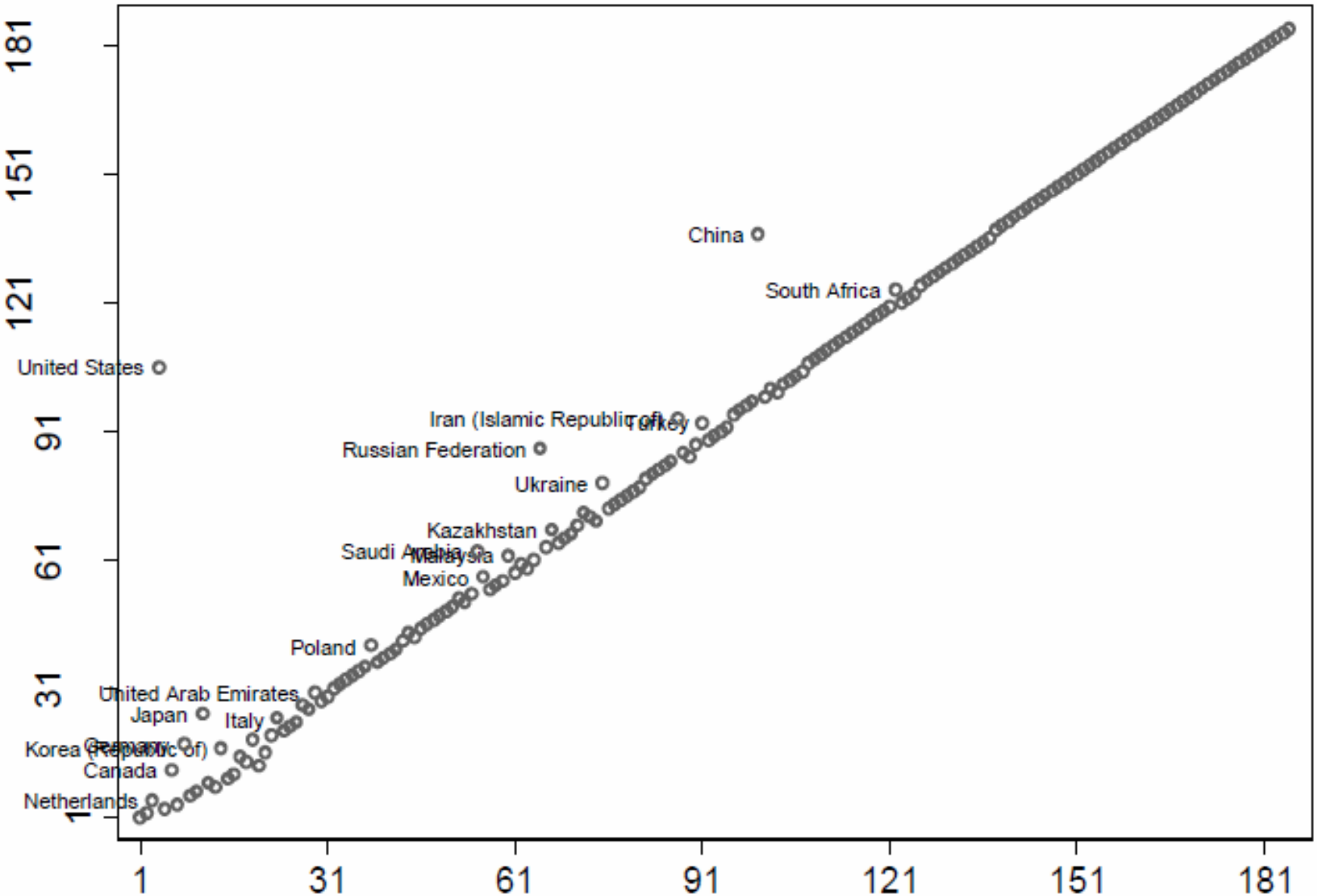
Securing Human Well-being within the Means of Nature:

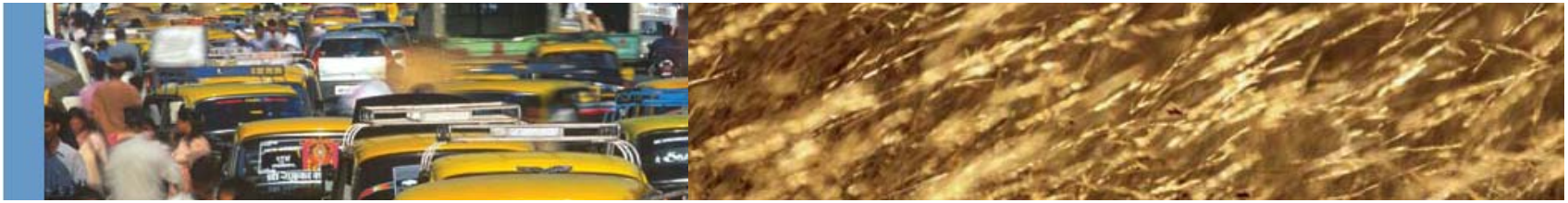
Mathis Wackernagel, Ph.D.

GEN, January 30, 2013

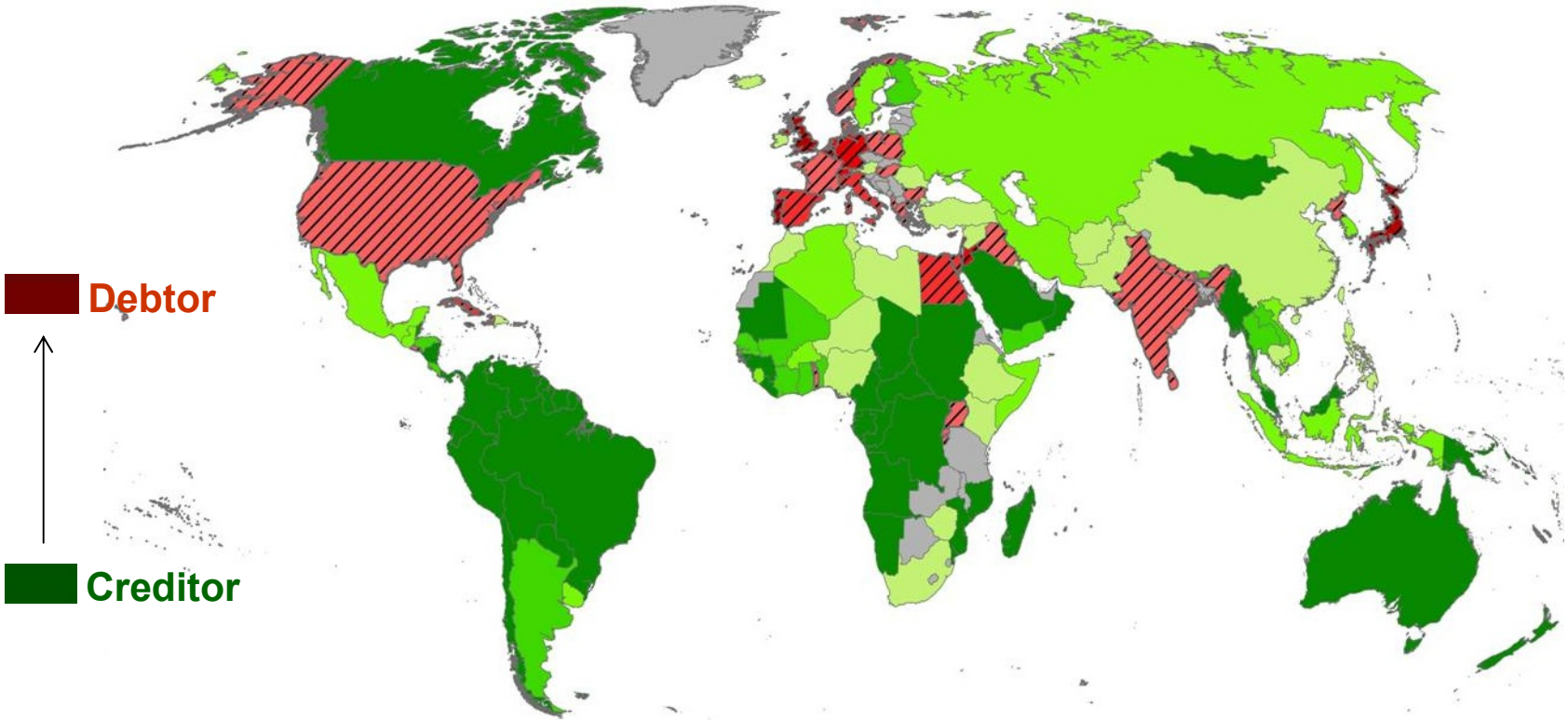
Global Footprint Network
Advancing the Science of Sustainability

Results: Changes in ranking for CO_2 per capit emissions (20% prob. of exceeding 2C)





Ecological Creditors and Ecological Debtors – 1961



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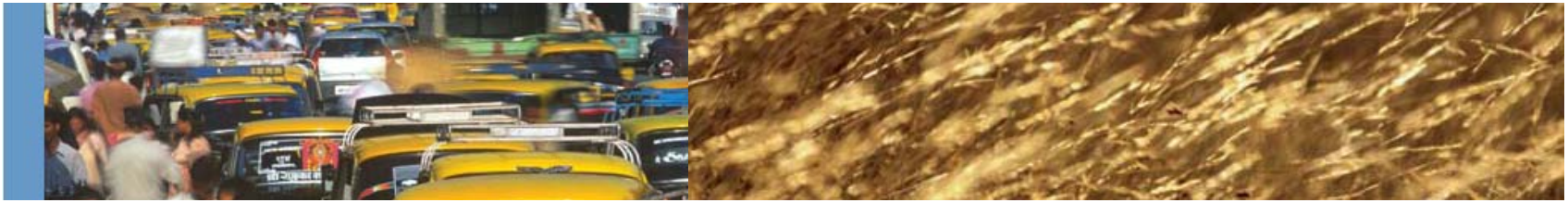
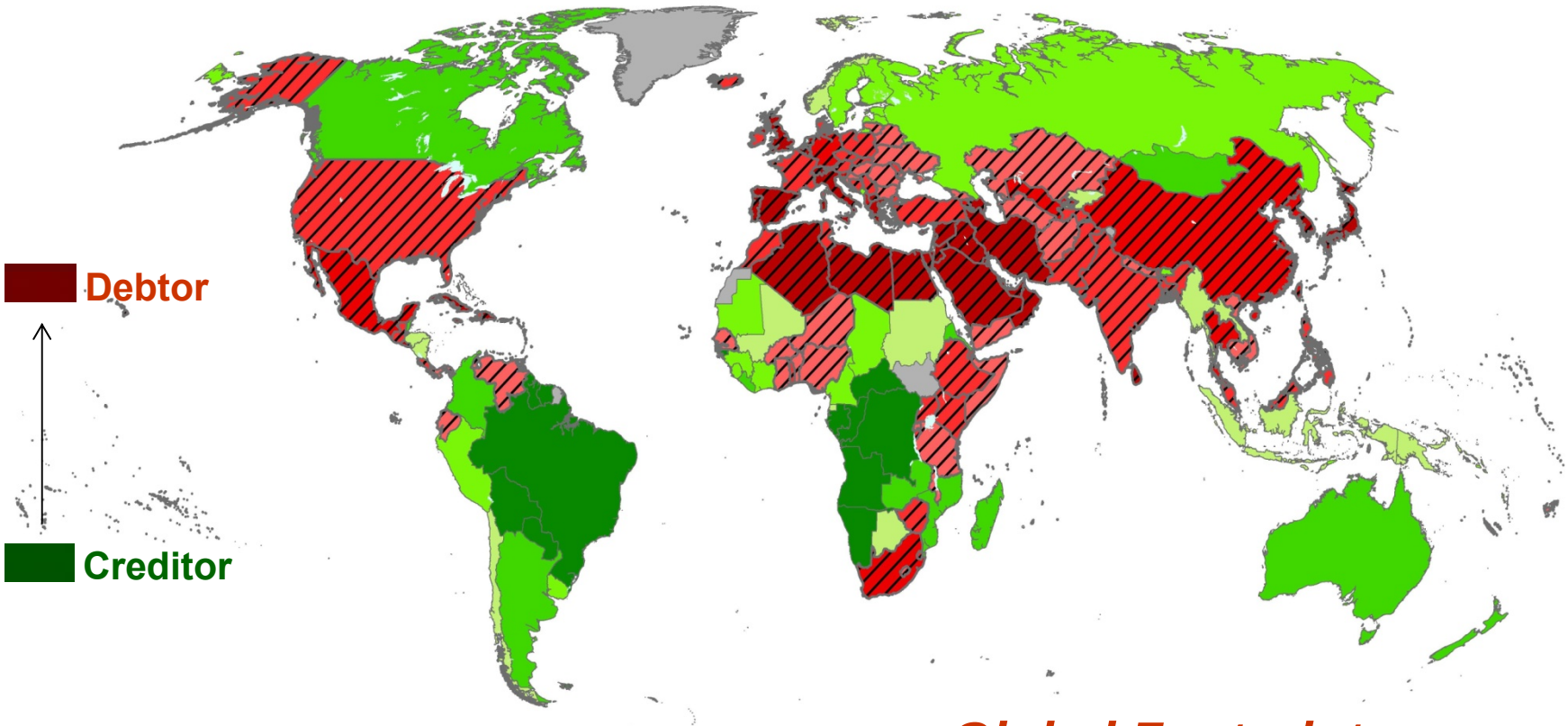
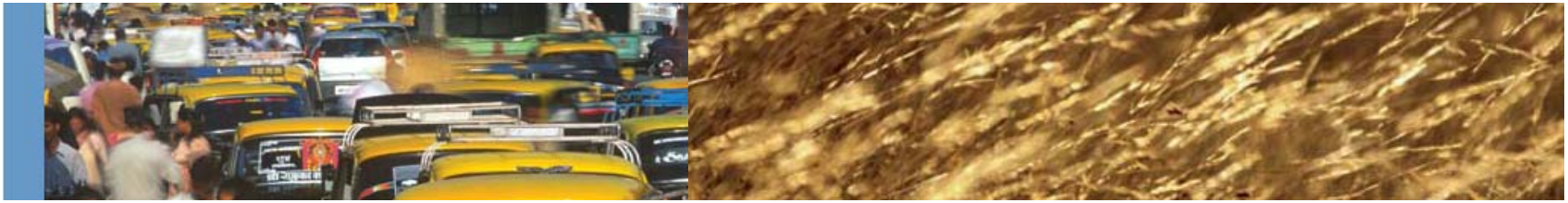


Ecological Creditors and Ecological Debtors – 2008



$$\frac{\textit{Global Footprint}}{\textit{Global Biocapacity}} = 1.5$$



Rare Earths? →

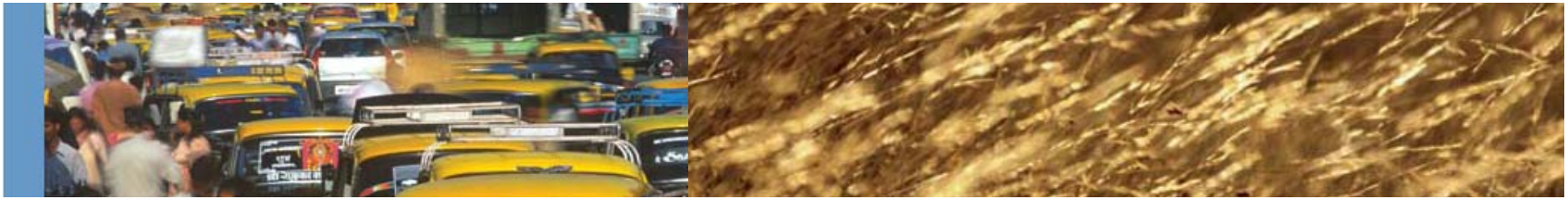
Fossil Fuel? → 5X

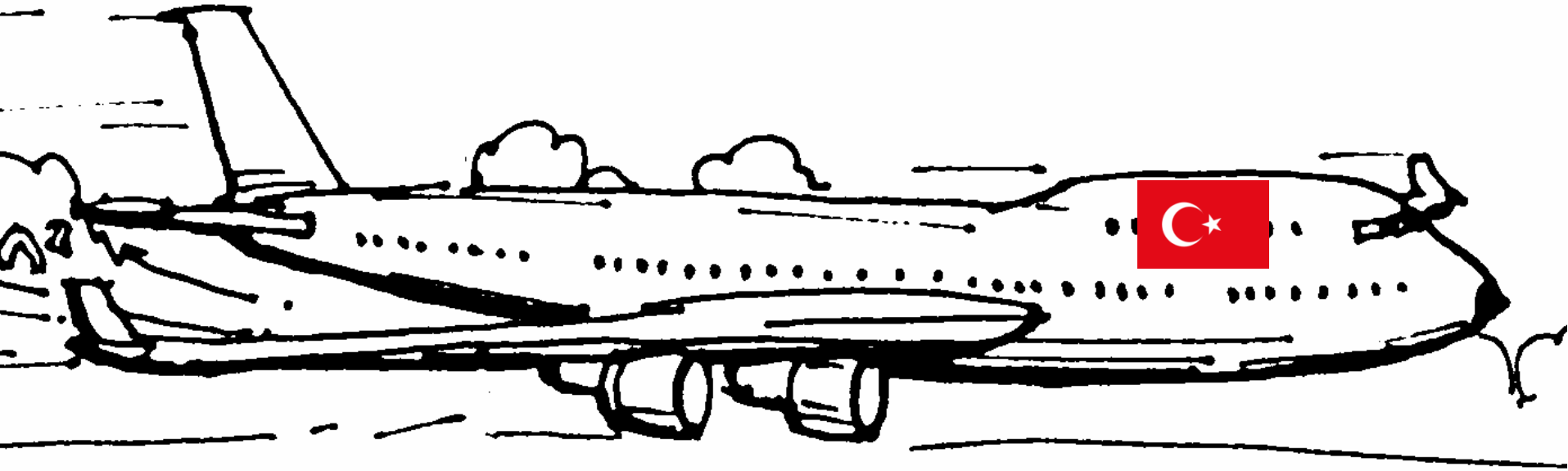
Move out of fossil?

1700 ppm?

Biocapacity!

The Food-Water-Energy Nexus





Framing question:

What do you need to know in order to operate **TURKEY** ' safely?

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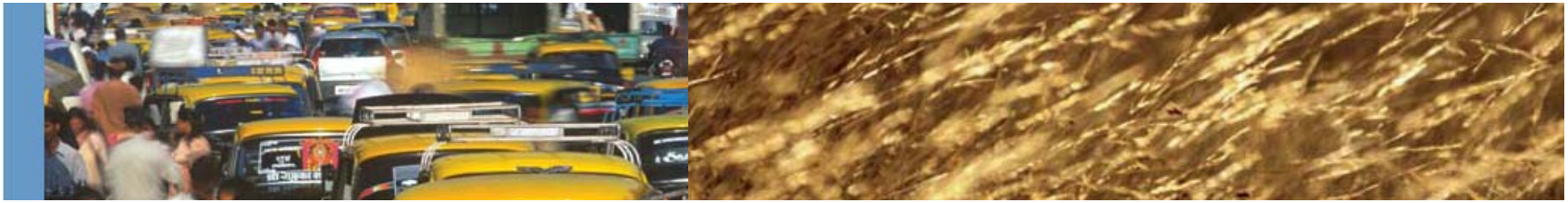

Dilemma:

Sustainable ⟷ Development

How many resources does it take compared to what we have? **Footprint?**

How well do we live? **HDI?**

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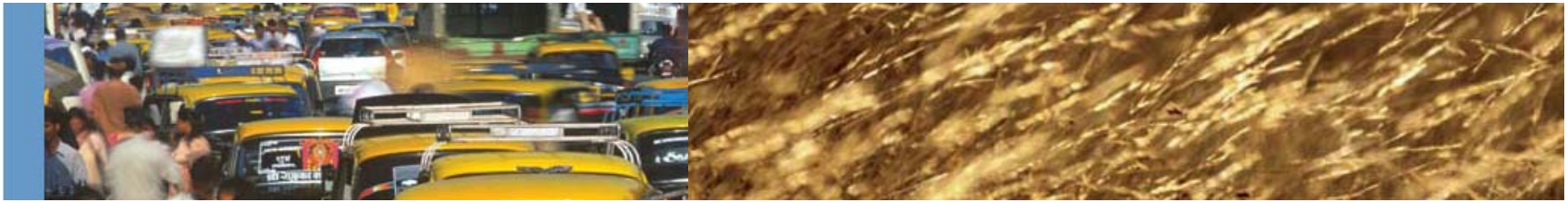

Measuring "sustainable development"

0.0 0.2 0.4 0.6 0.8 1.0

development

HUMAN DEVELOPMENT INDEX

⇨HDI

⇧Sustainable (fits on one planet?)

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The Ecological Footprint

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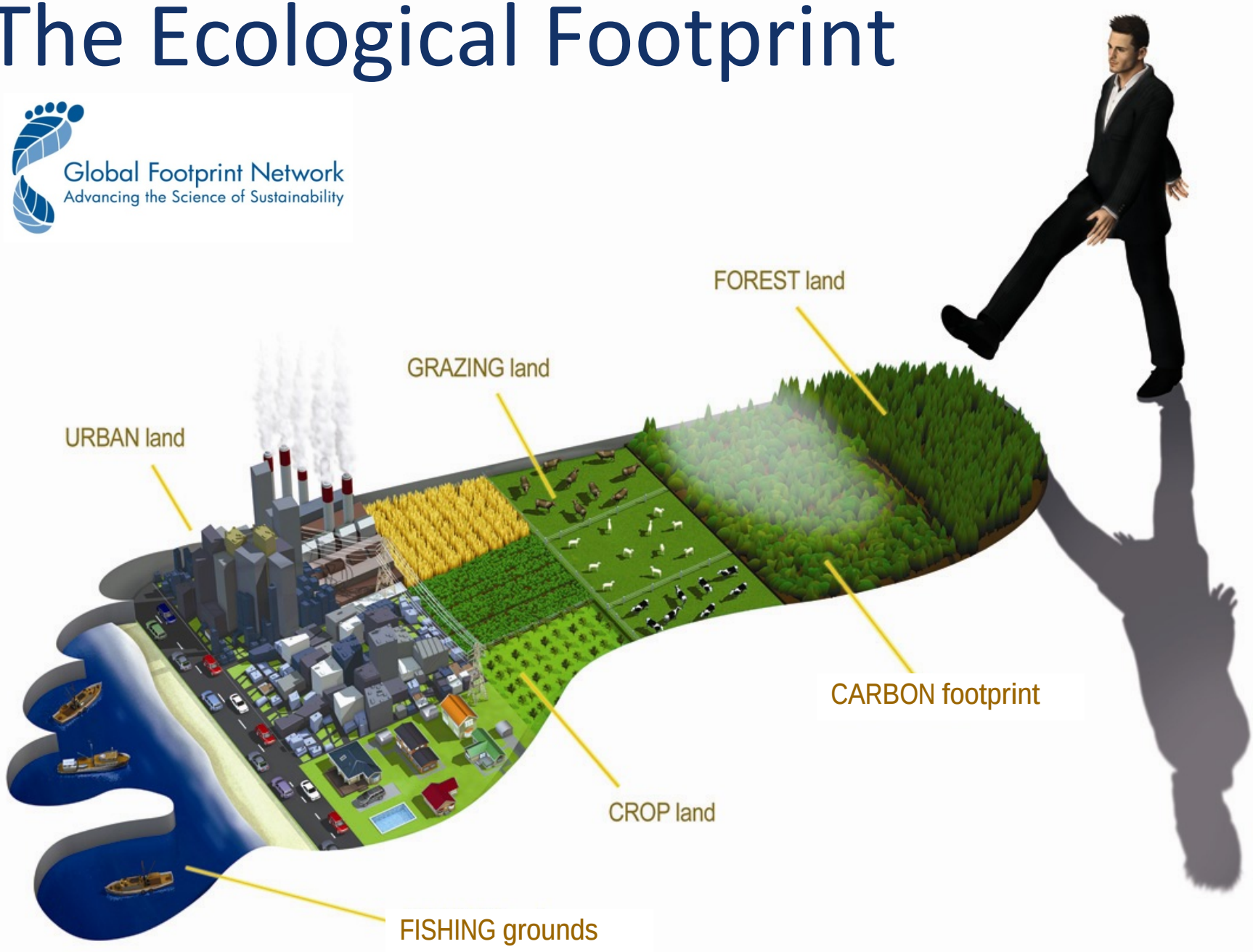

Accounting Framework for Ecosystem Services

Biocapacity:
How much bioproductive area is **available to us**?

Ecological Footprint:
How much bioproductive area do we **demand**?

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The Basic Equation

Amount per year

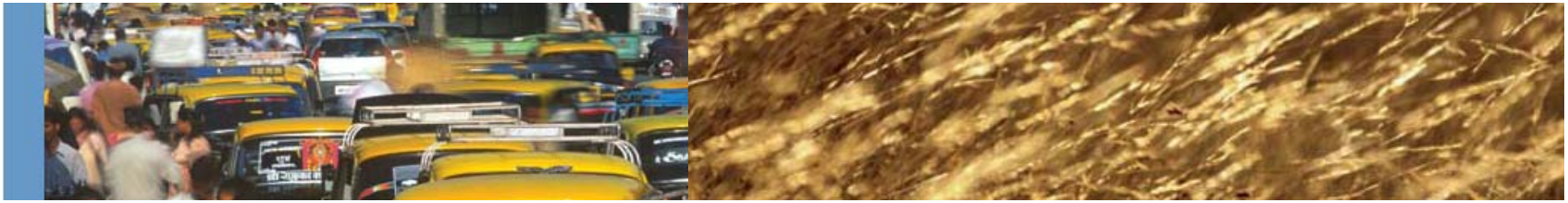
Yield = ----------

Area

The Basic Equation

$$\text{Area} = \frac{\text{Amount per year}}{\text{Yield}}$$

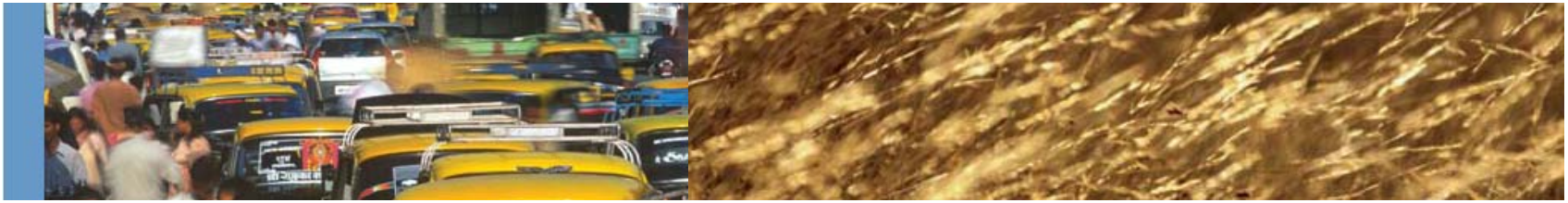
Translate area from ha into global ha…



Measurement Unit: global hectare

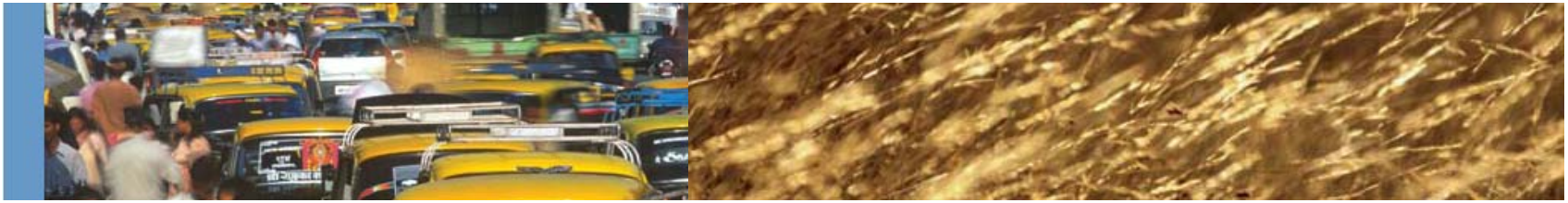
Half as productive as world average

Double as productive as world average



LIMITATIONS

1. Only 7000 data points per country and year, UN statistics, SEEA compatible
2. Necessary, not sufficient condition for lasting success (only one criterion)
3. Natural capital components have different dynamics
4. Accuracy to be further improved – underestimates biocapacity deficit
5. Only measures biocapacity, not depletion of stocks.



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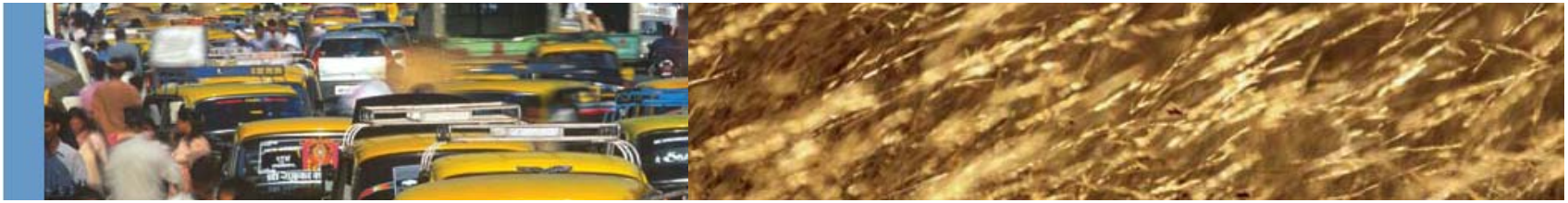

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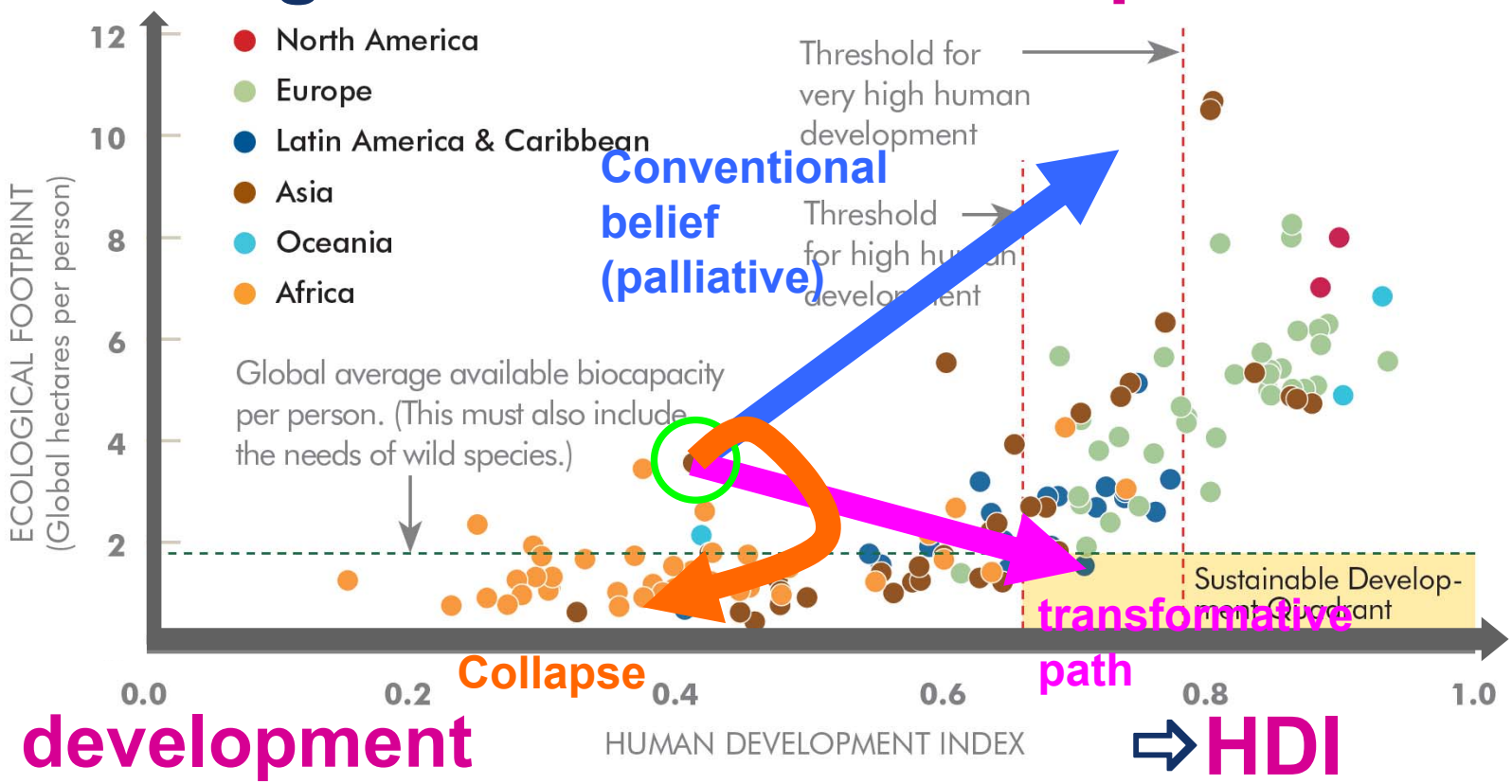

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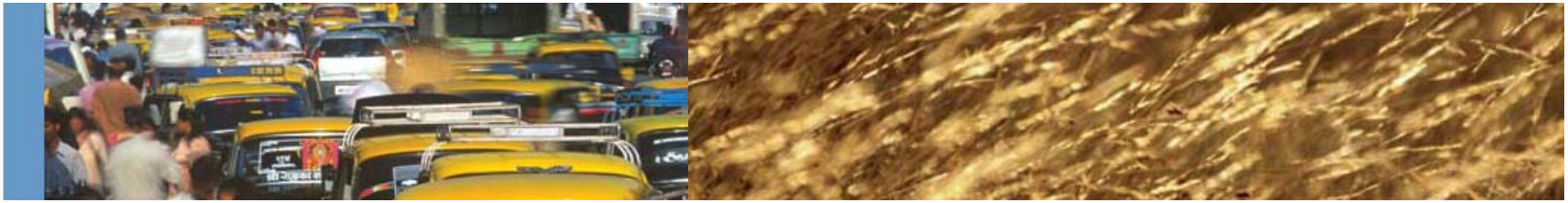
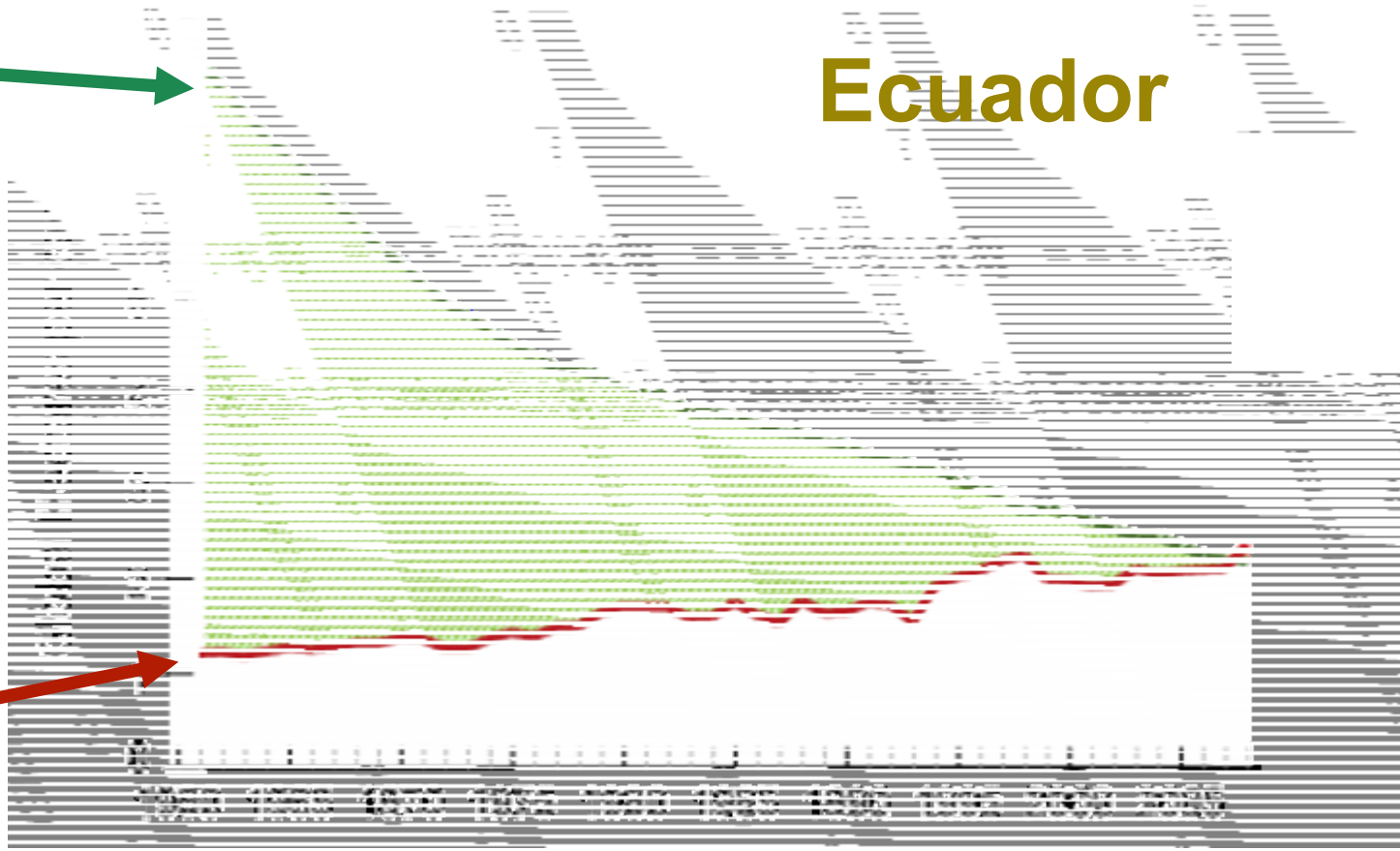


Biocapacity per person

Ecuador



Ecological Footprint per person

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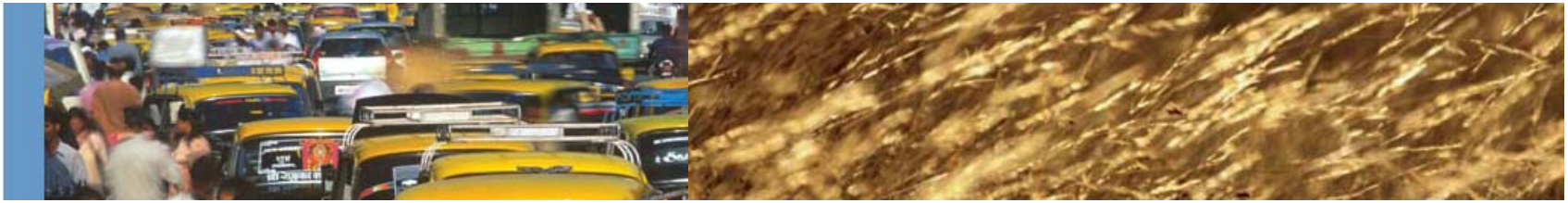
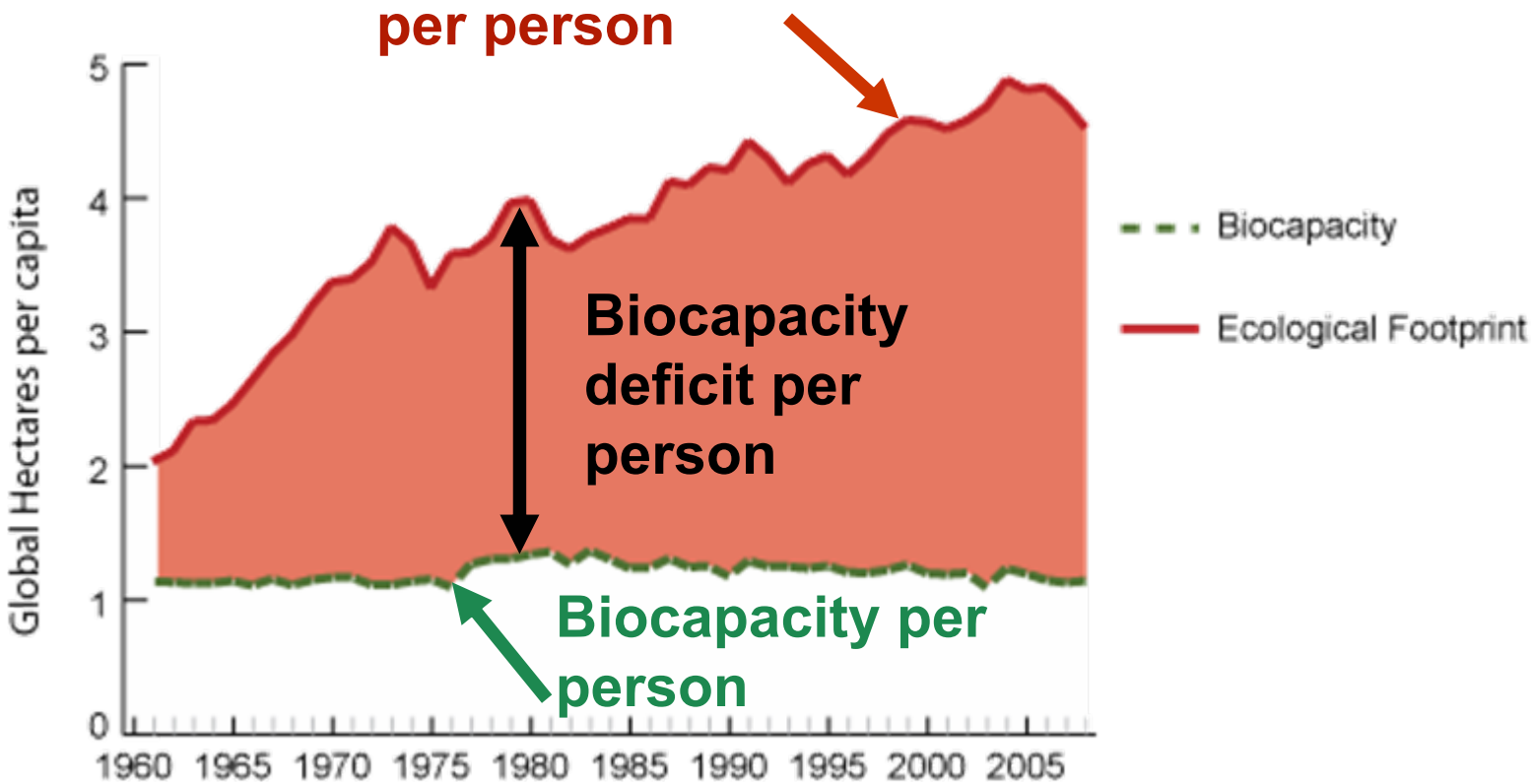


Italy



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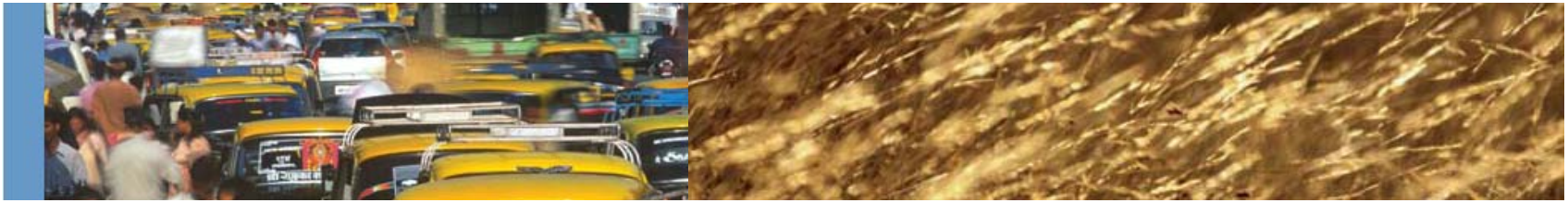

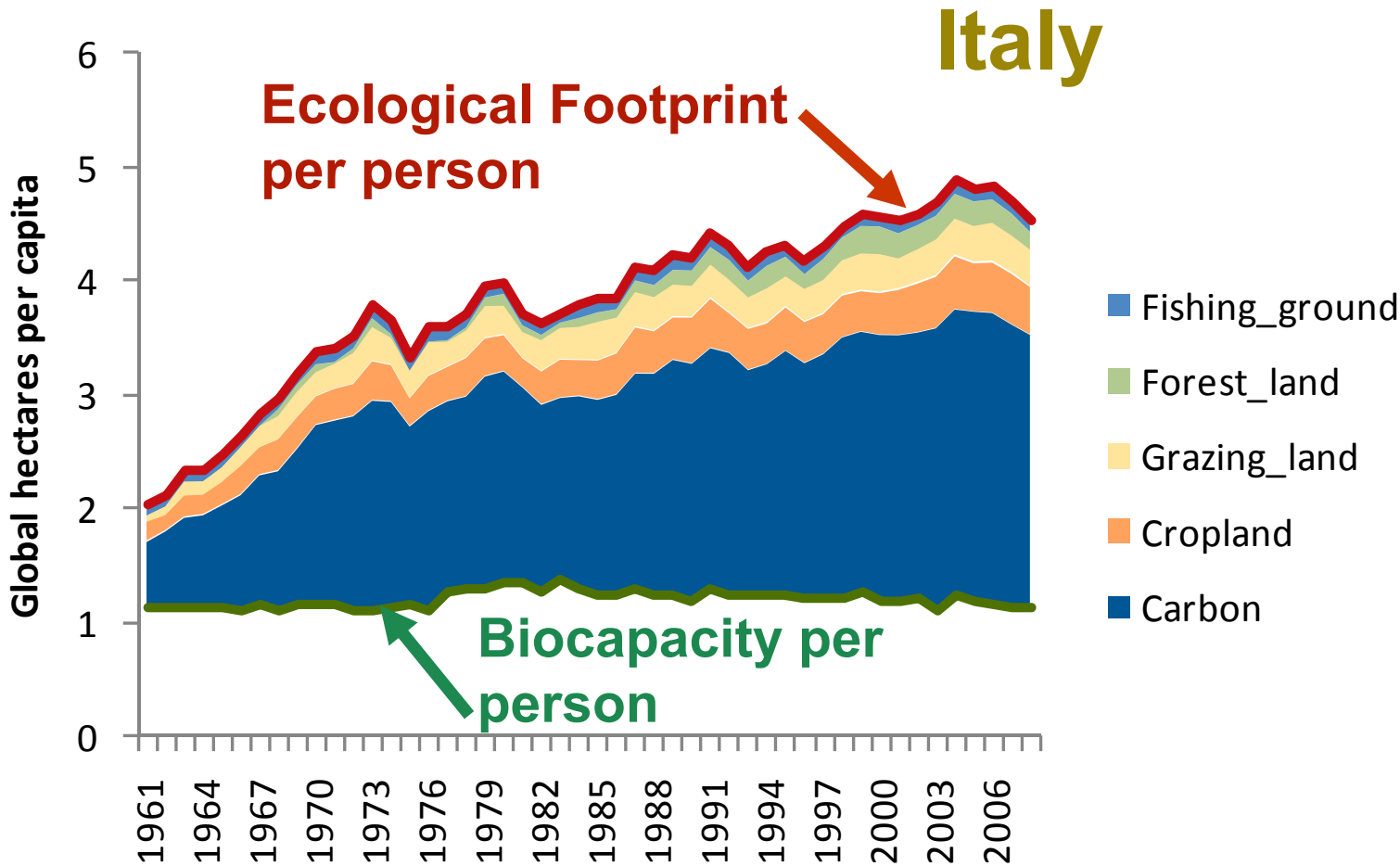

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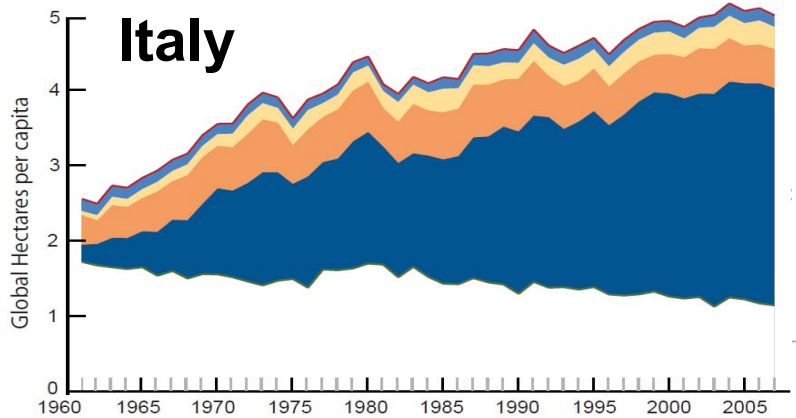
Composition of Italy's Biocapacity Deficit

Biocapacity Deficit



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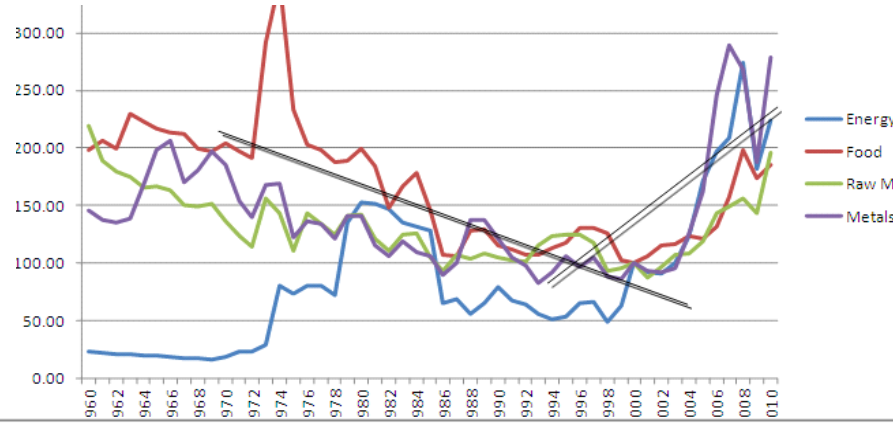
World Commodity Prices



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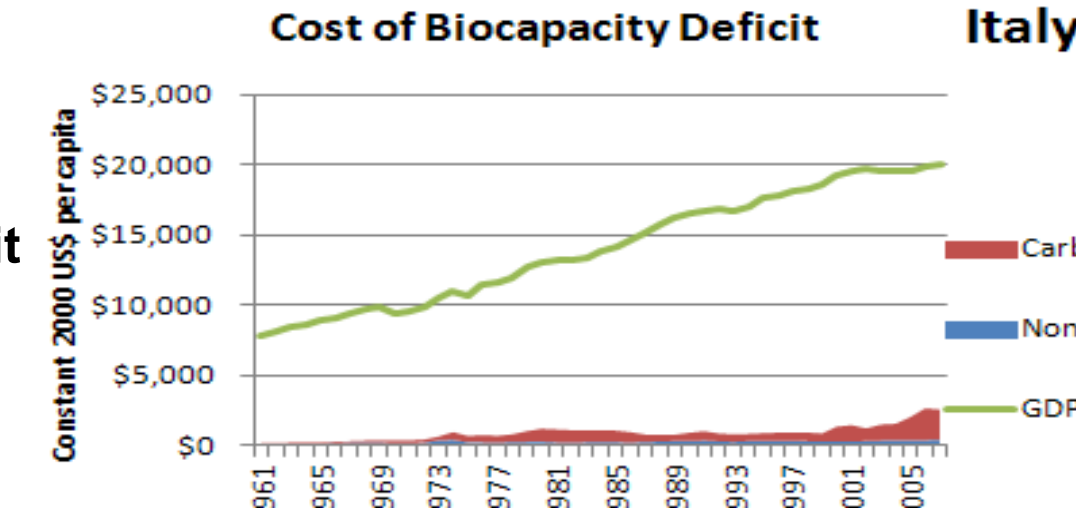
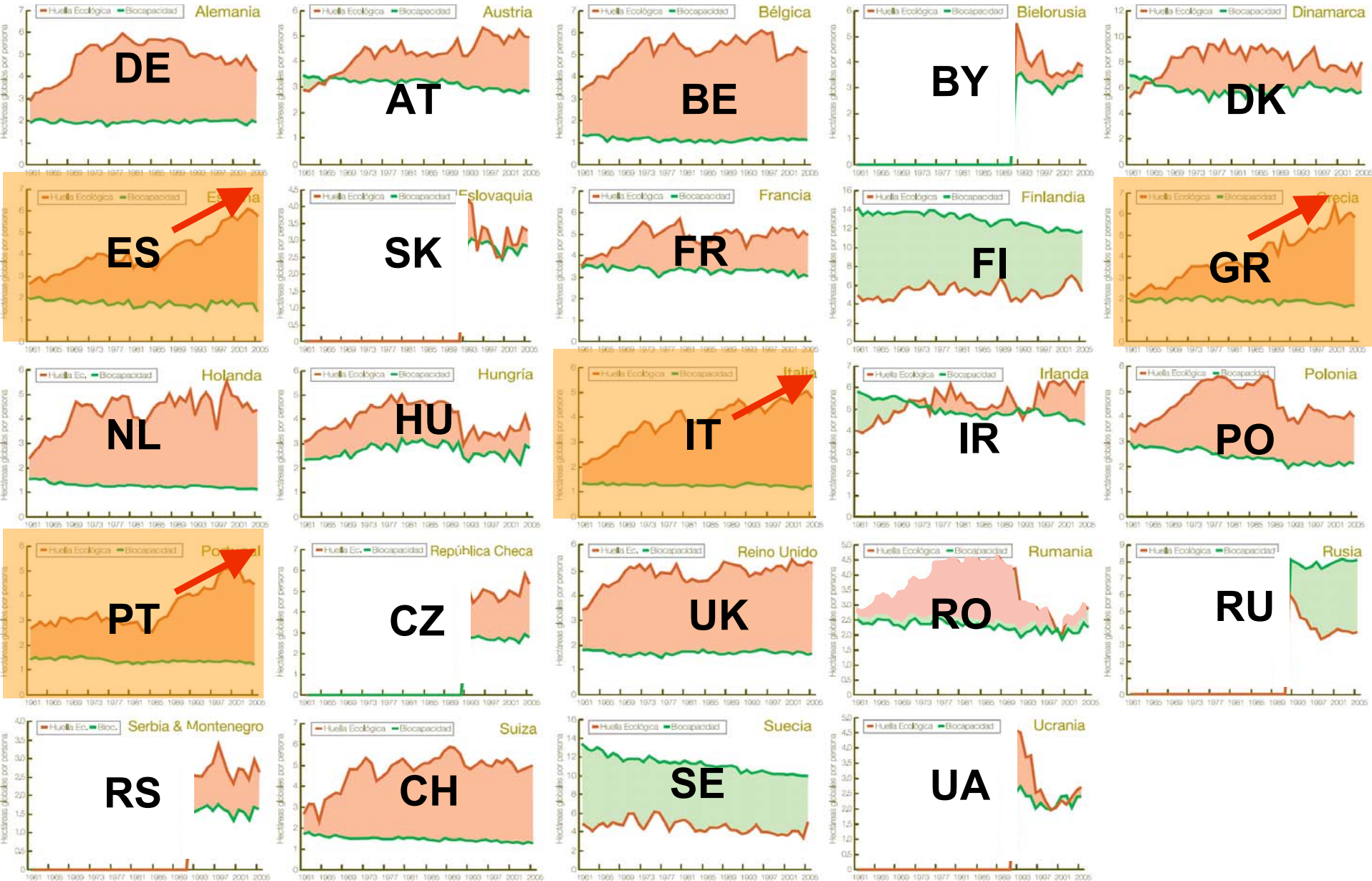
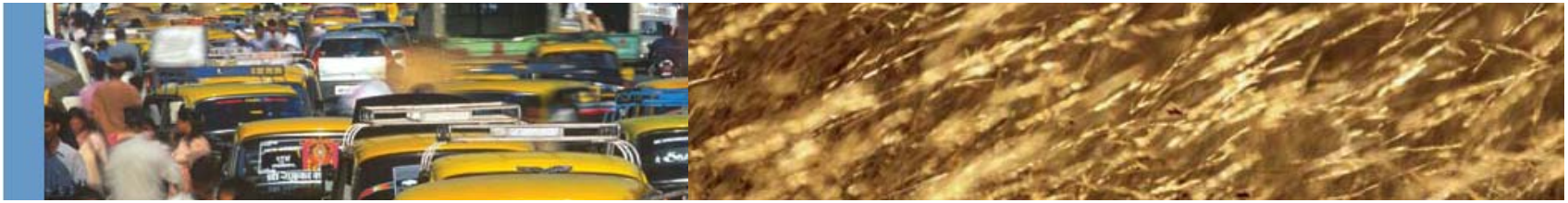
Cost of Biocapacity Deficit

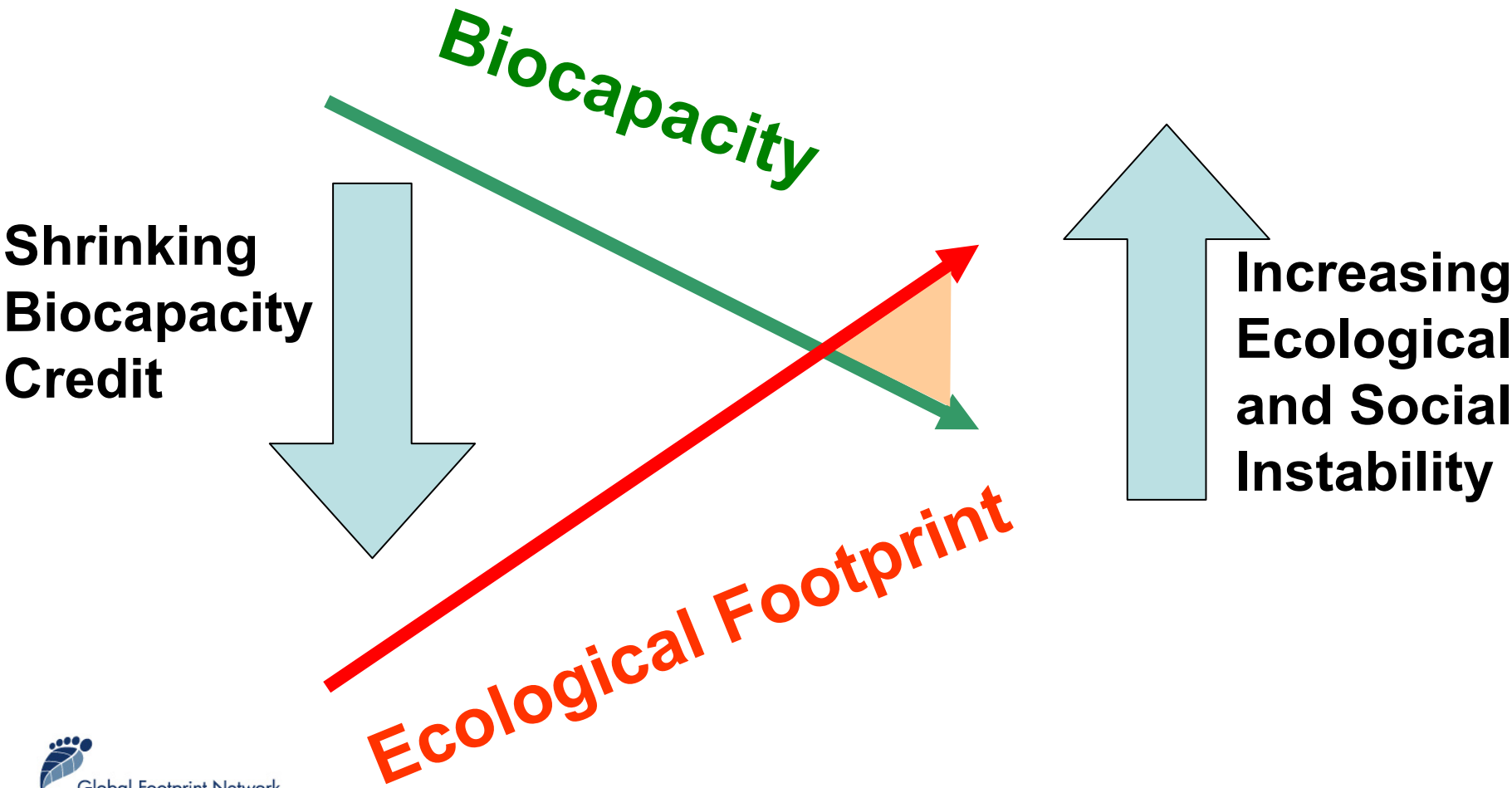


Ecological Creditors and Ecological Debtors in Europe

Ecological Footprint and Biocapacity PER CAPITA,1961-2005







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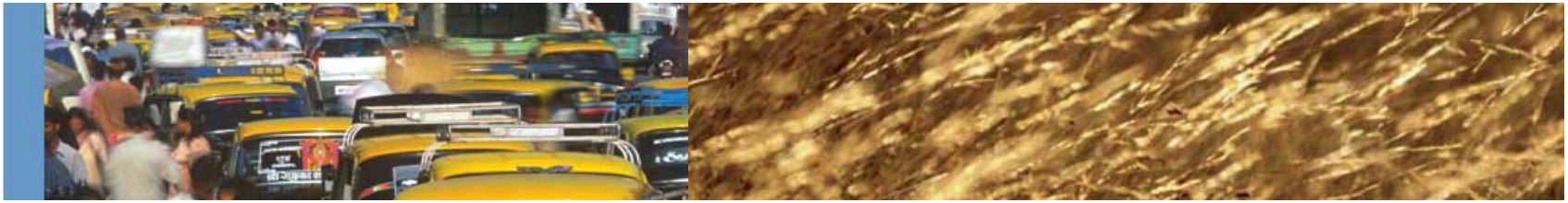

New principles for success

- Nature has a budget. Do you know ***how much biocapacity you have?*** and ***how much you use?***
- Biocapacity is the currency of the 21st century. Key to prosperity.
- Self-interest for countries, cities to reduce their resource deficit is overwhelming.
- How does development work within the resource constraints of ecosystems?

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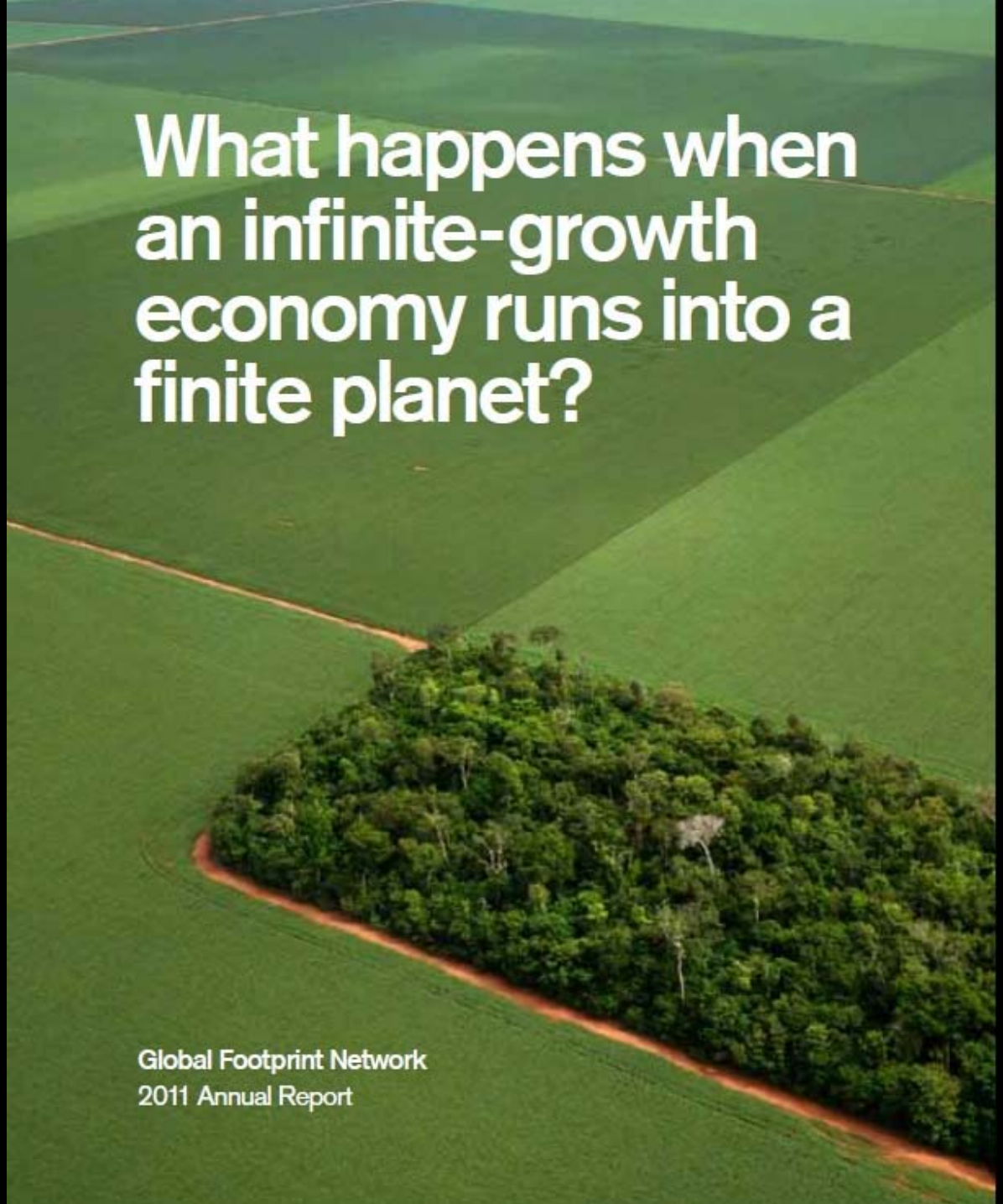
Advancing the Science of Sustainability

mathis@footprintnetwork.org

What happens when an infinite-growth economy runs into a finite planet?



Global Footprint Network
2011 Annual Report

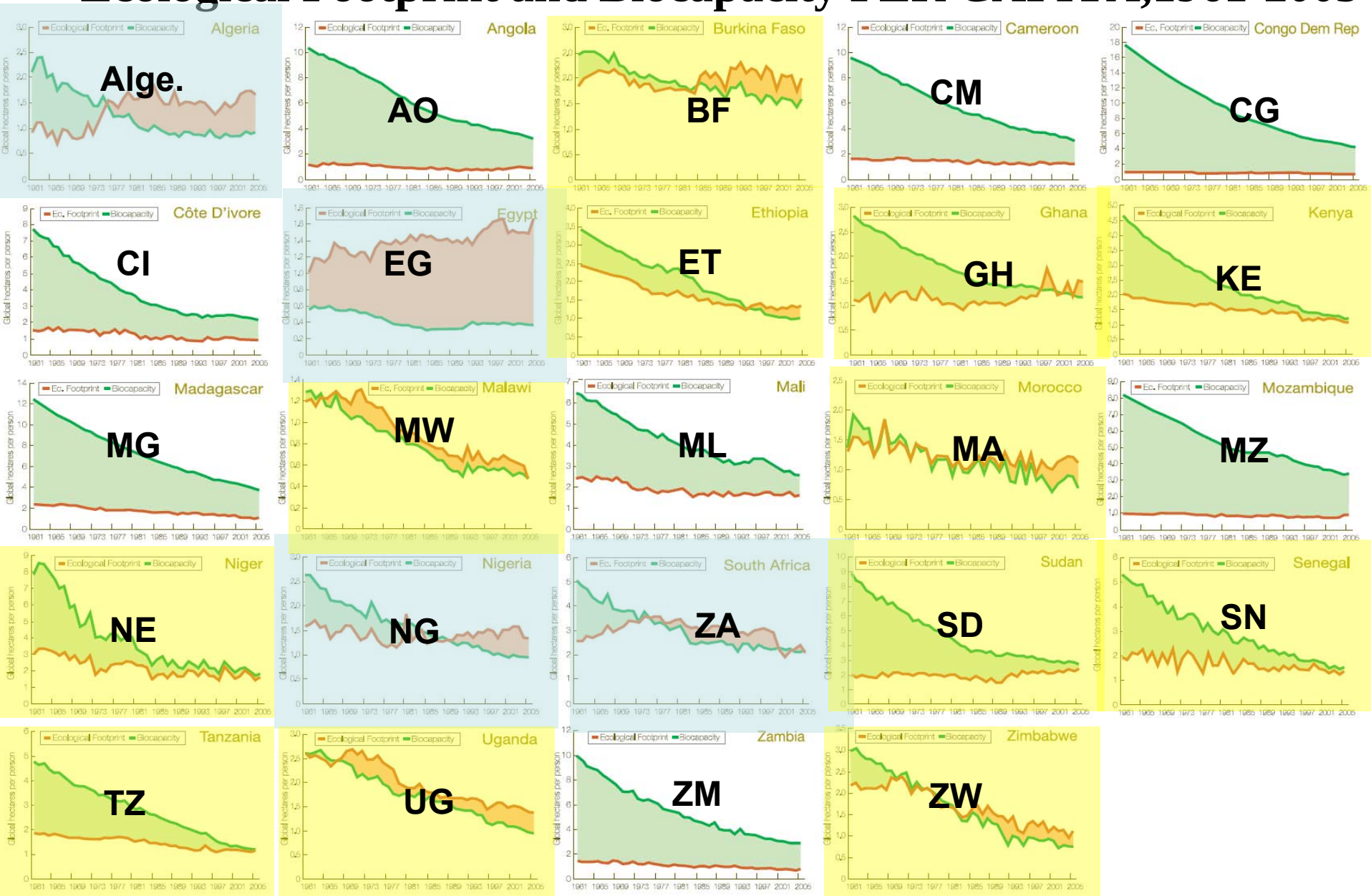

Debt boils over.
ΑΣΤΥΝΟΜΙΑ
POLICE

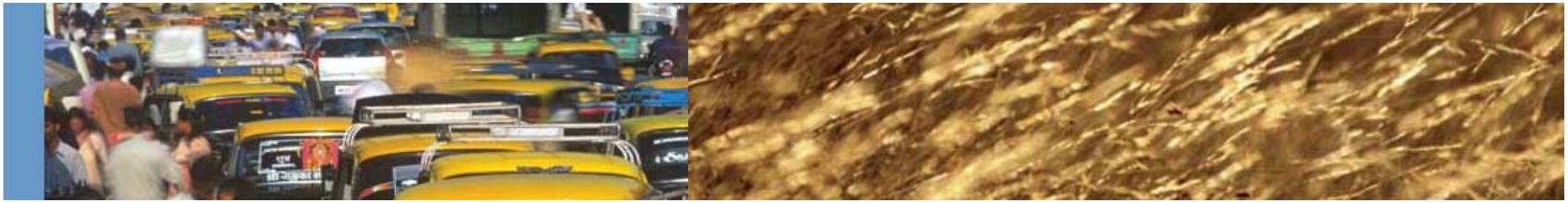

The majority is left out.


Biodiversity is for sale.

Ecological Creditors and Ecological Debtors in Africa

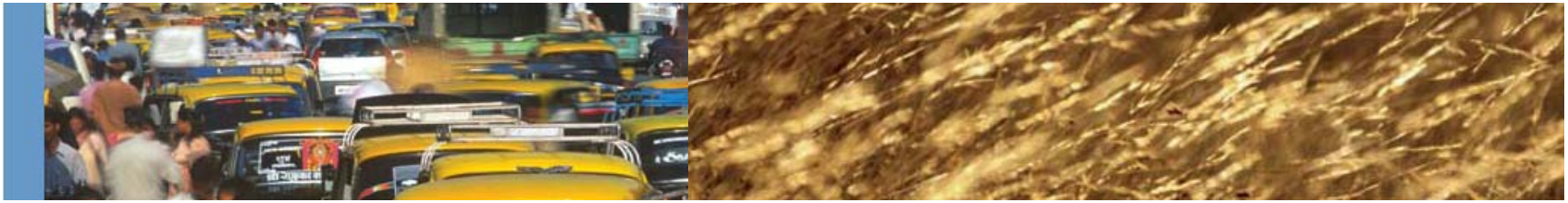
Ecological Footprint and Biocapacity PER CAPITA,1961-2005





WHAT WE WILL COVER

1. How do we measure the Footprint?
2. What do we need to know to operate safely?
3. Why does it matter to nations?
4. With whom do we work?
5. How do we know we are making progress? (SDROI)



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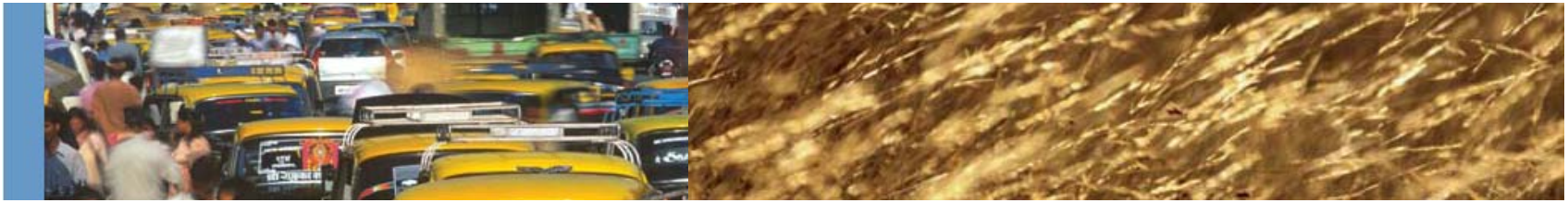


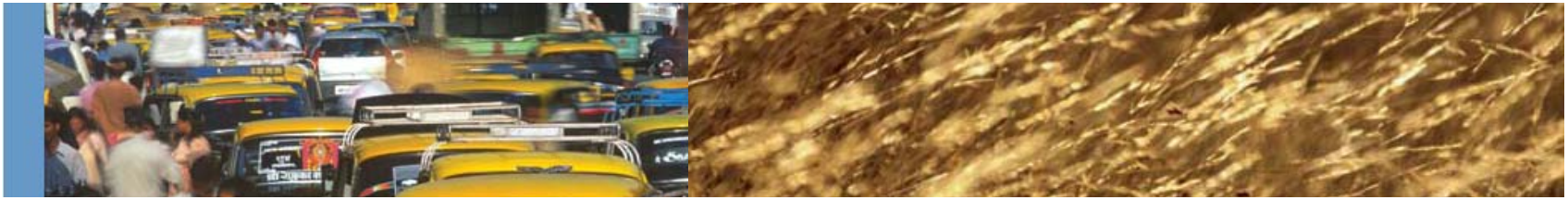
What is the Goal? Are we managing against it?

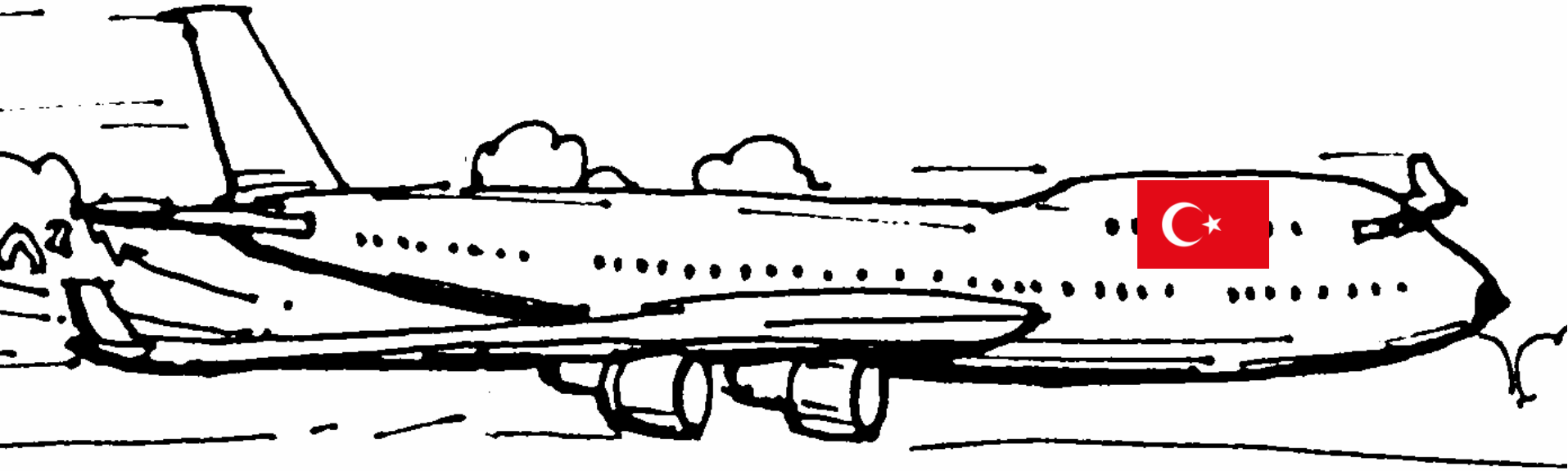
The Goal of International Development: Alleviating Poverty – in a transformational, not palliative way. We want results to last.

If we managed against this goal, the key performance indicator ought to be: *How much transformational poverty alleviation are we generating per dollar international development?*

This is what **SDROI**[*)] measures.

*) *Sustainable Development Return on Investment*





Framing question:

What do you need to know in order to operate **TURKEY** ' safely?

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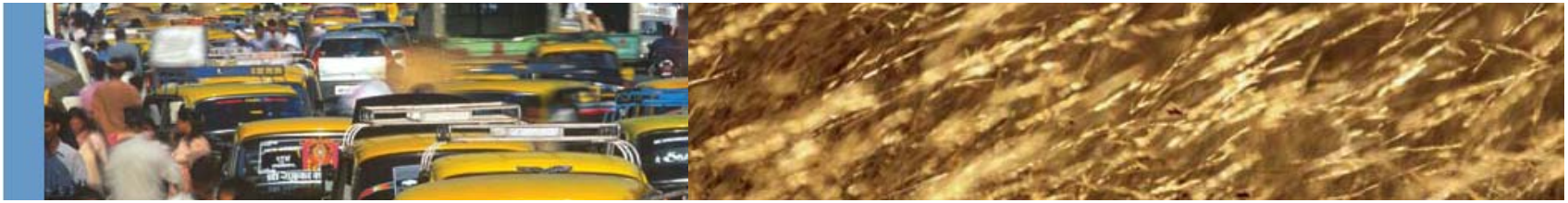

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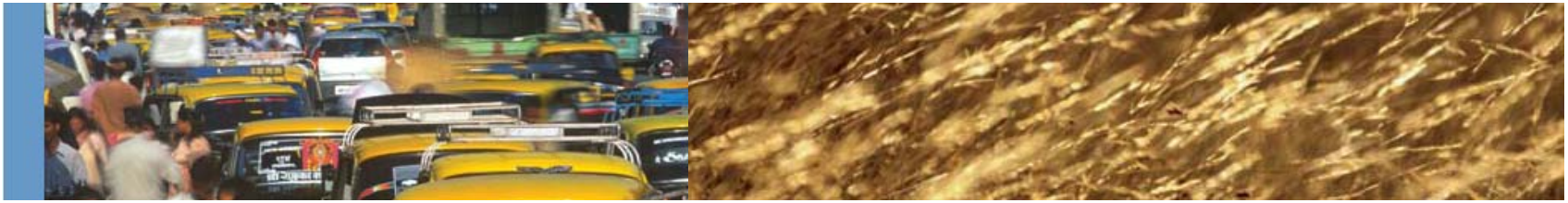

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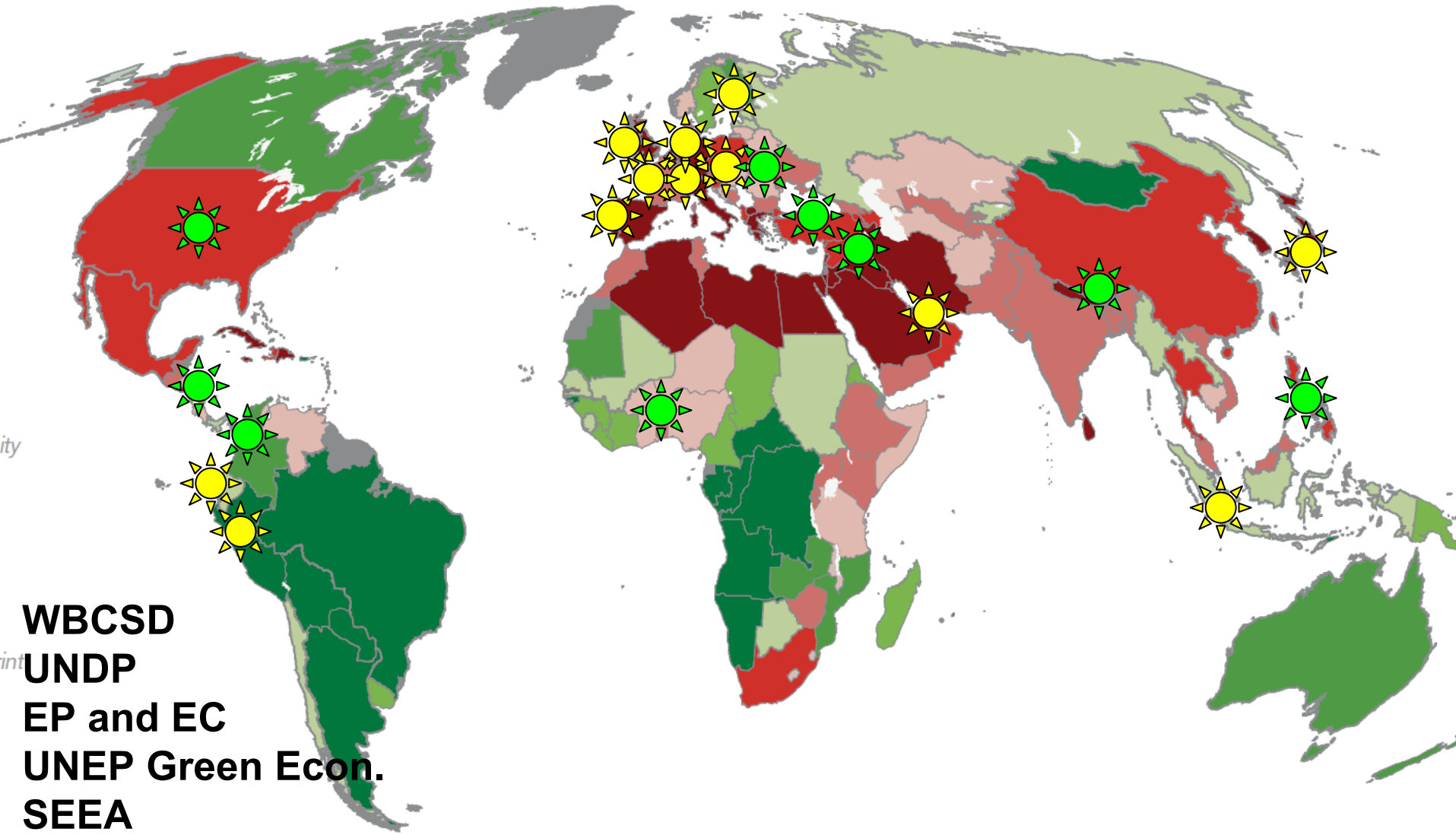
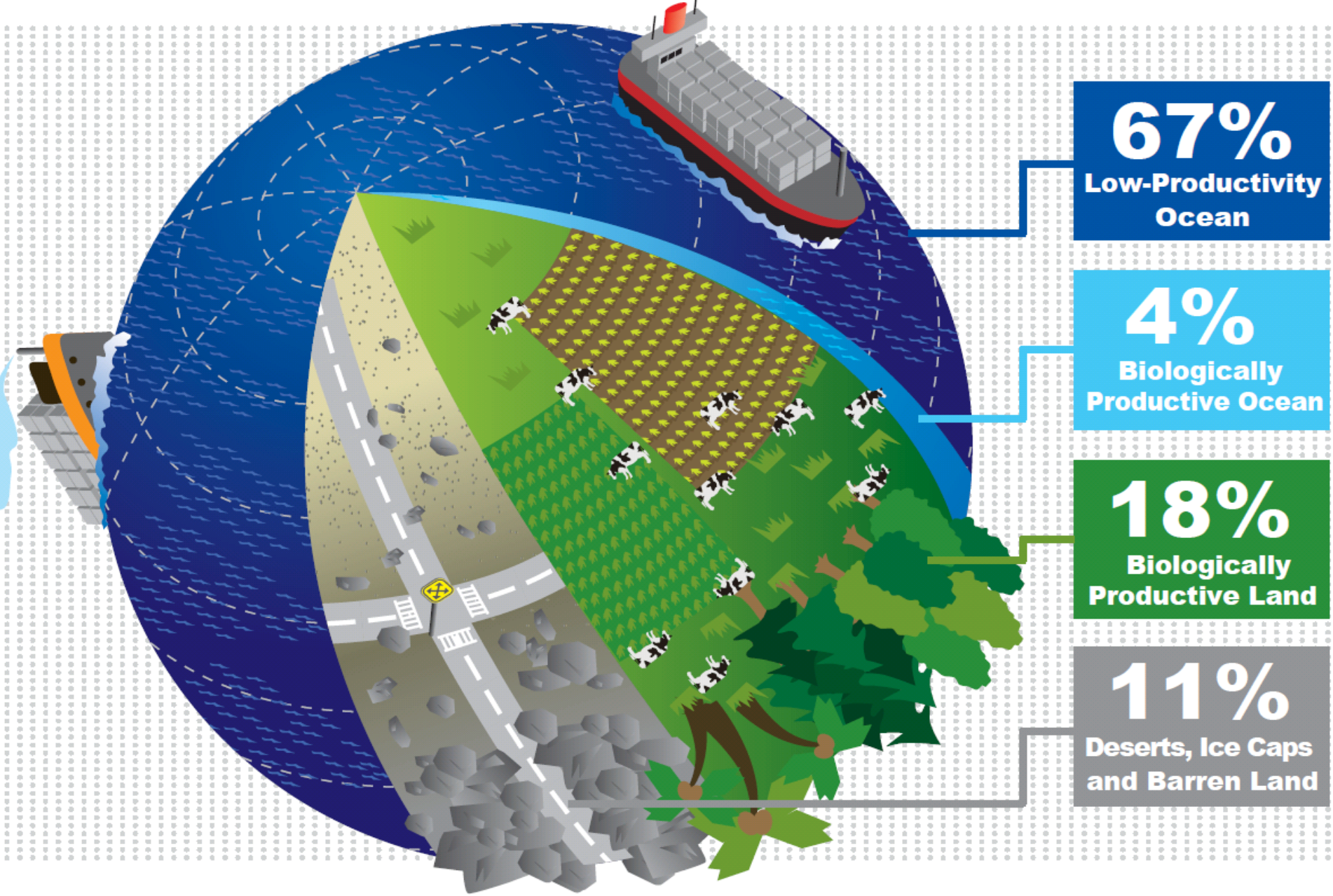
Existing official national gov Footprint studies

In discussion with national govs



WBCSD
UNDP
EP and EC
UNEP Green Econ.
SEEA



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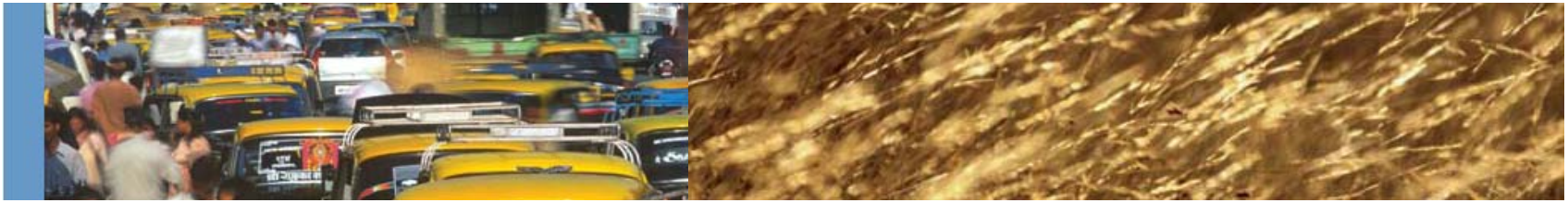

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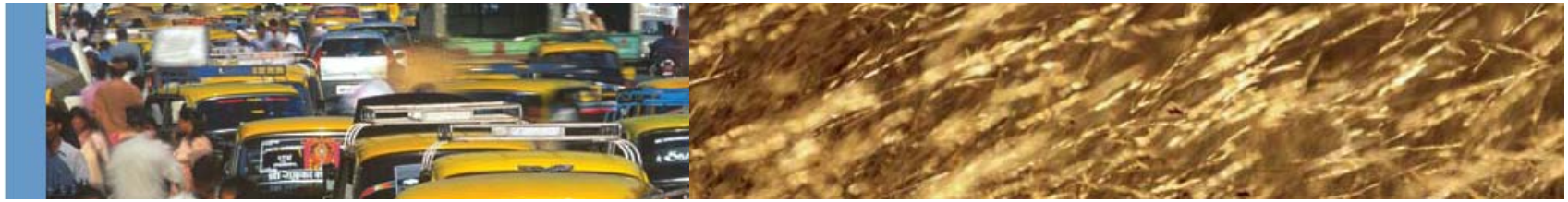

Human Development:
Making Development Last

150 b$ per year from OECD countries

How much lasting poverty alleviation do you generate per dollar investment?

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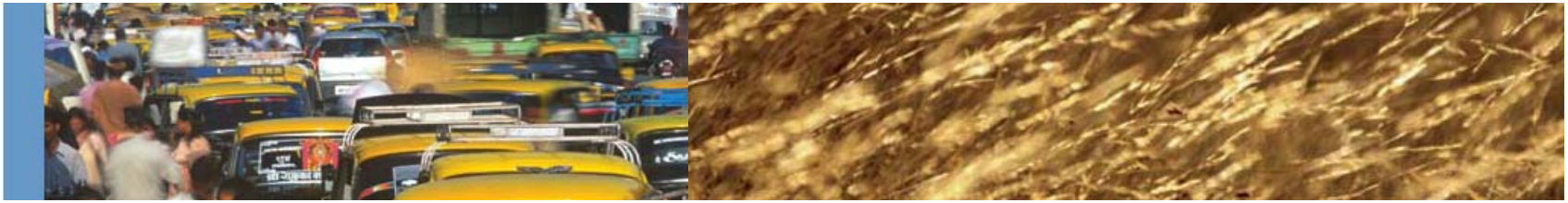
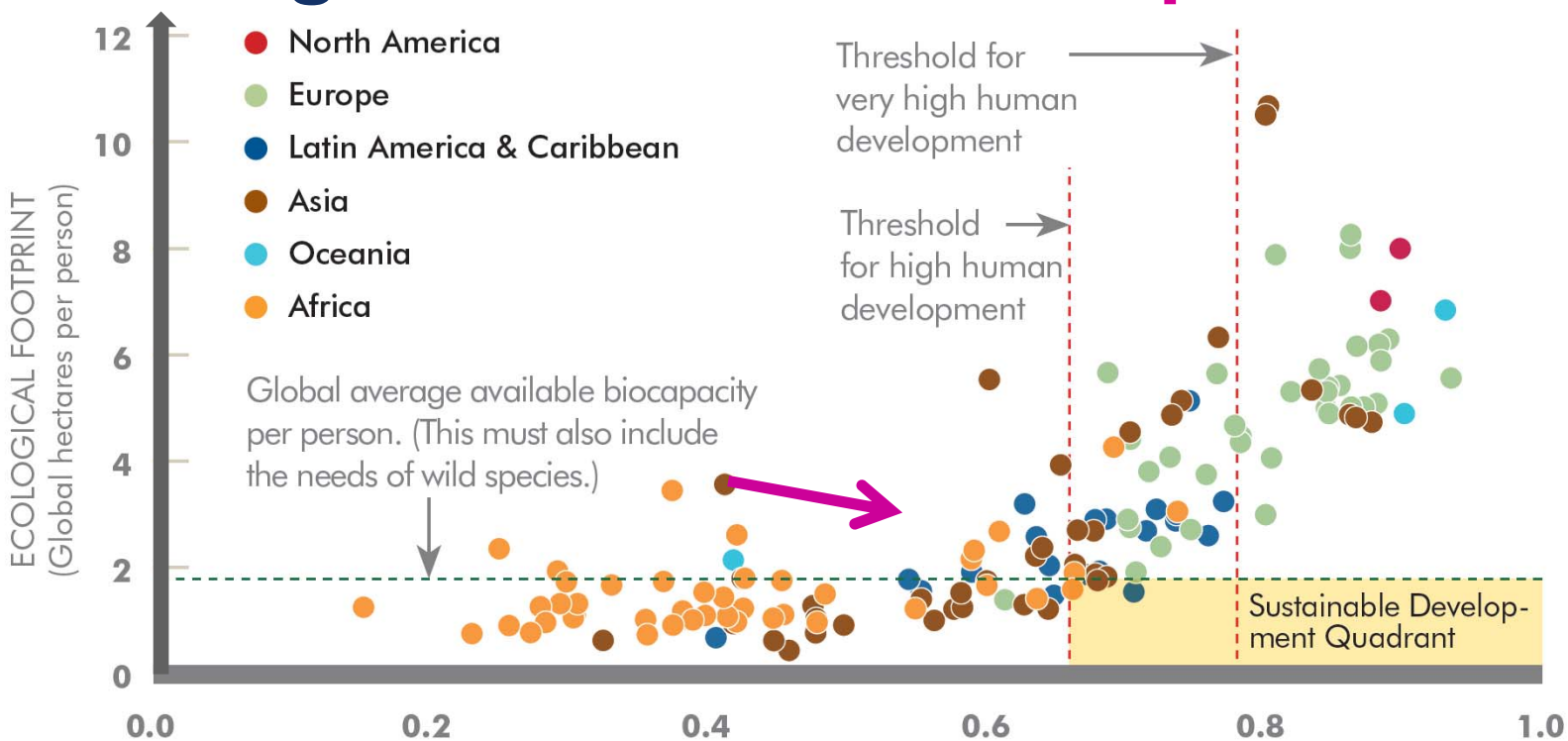


Measuring "sustainable development"



development ⇨ **HDI**

⇧ **Sustainable (fits on one planet?)**

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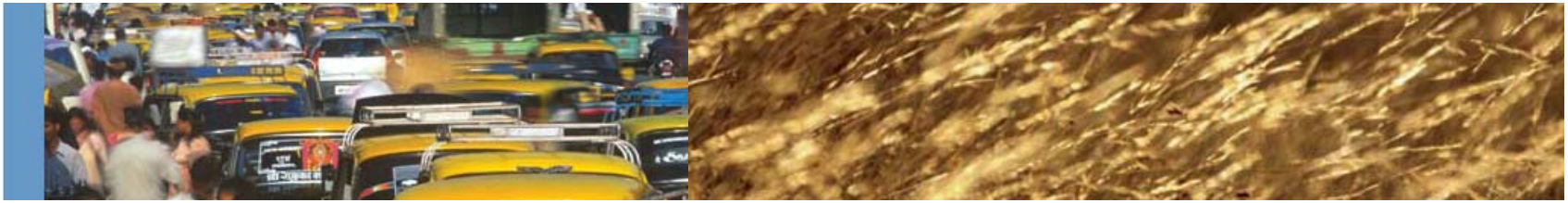
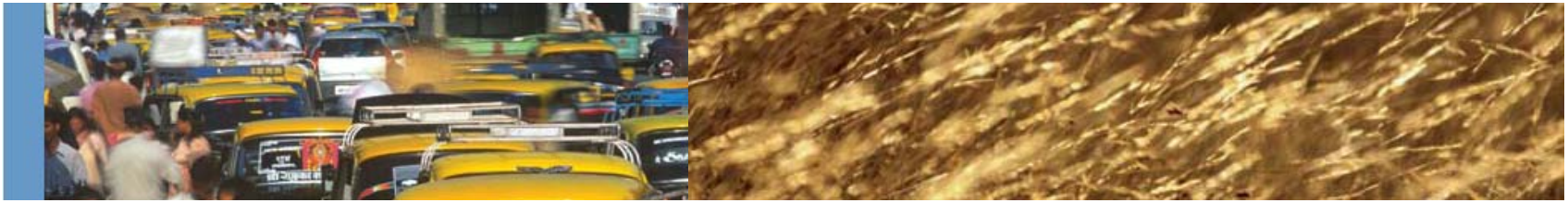


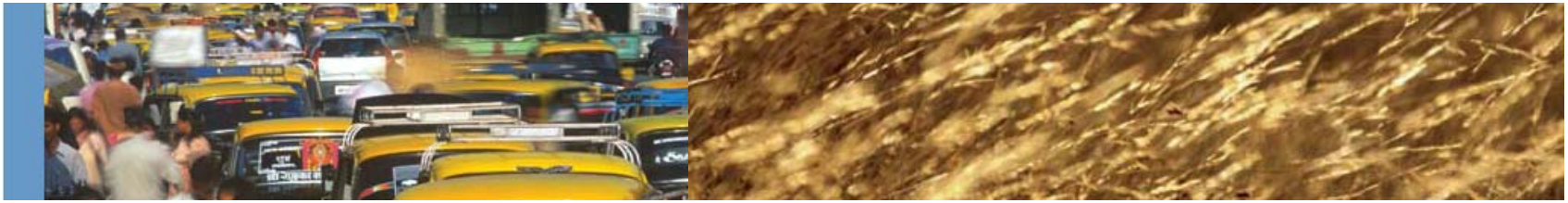
Our Mission

Our Mission is to end ecological overshoot by making **ecological limits central to decision making**. By institutionalizing resource accounting in national governments, Global Footprint Network **influences major investments** and **policy shifts** to support global sustainability.



Our Programs

- **Human Development Initiative**
- Environmental Policy
- Competitiveness 2.0
- Finance Initiative



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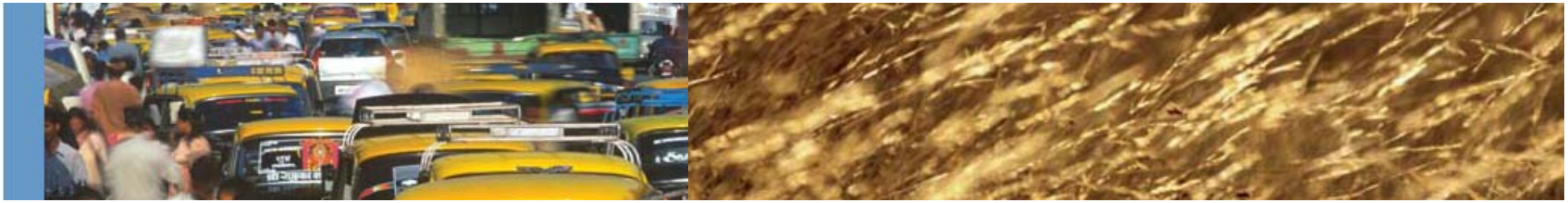

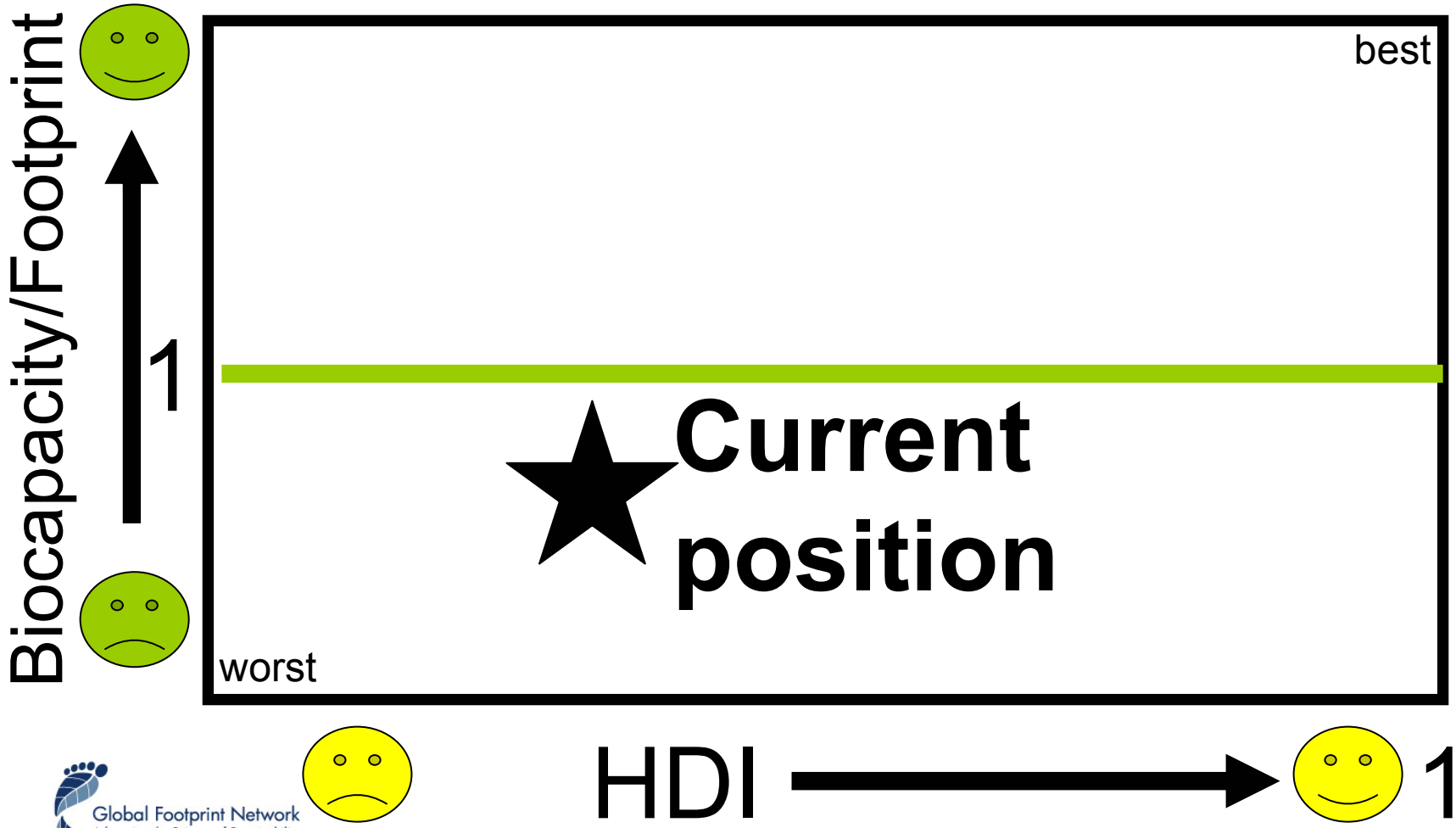

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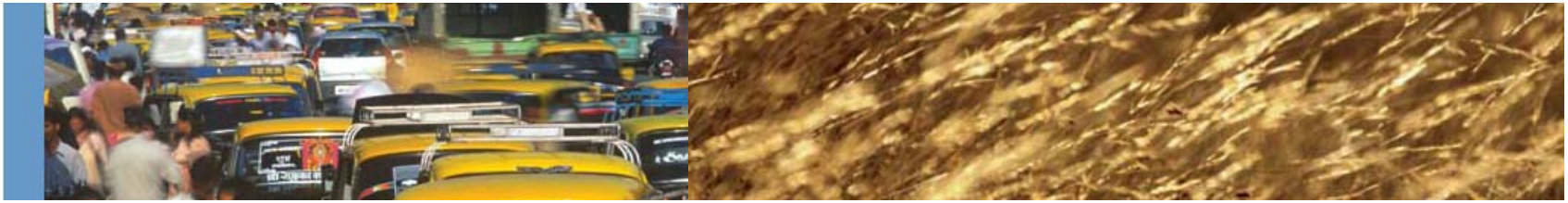

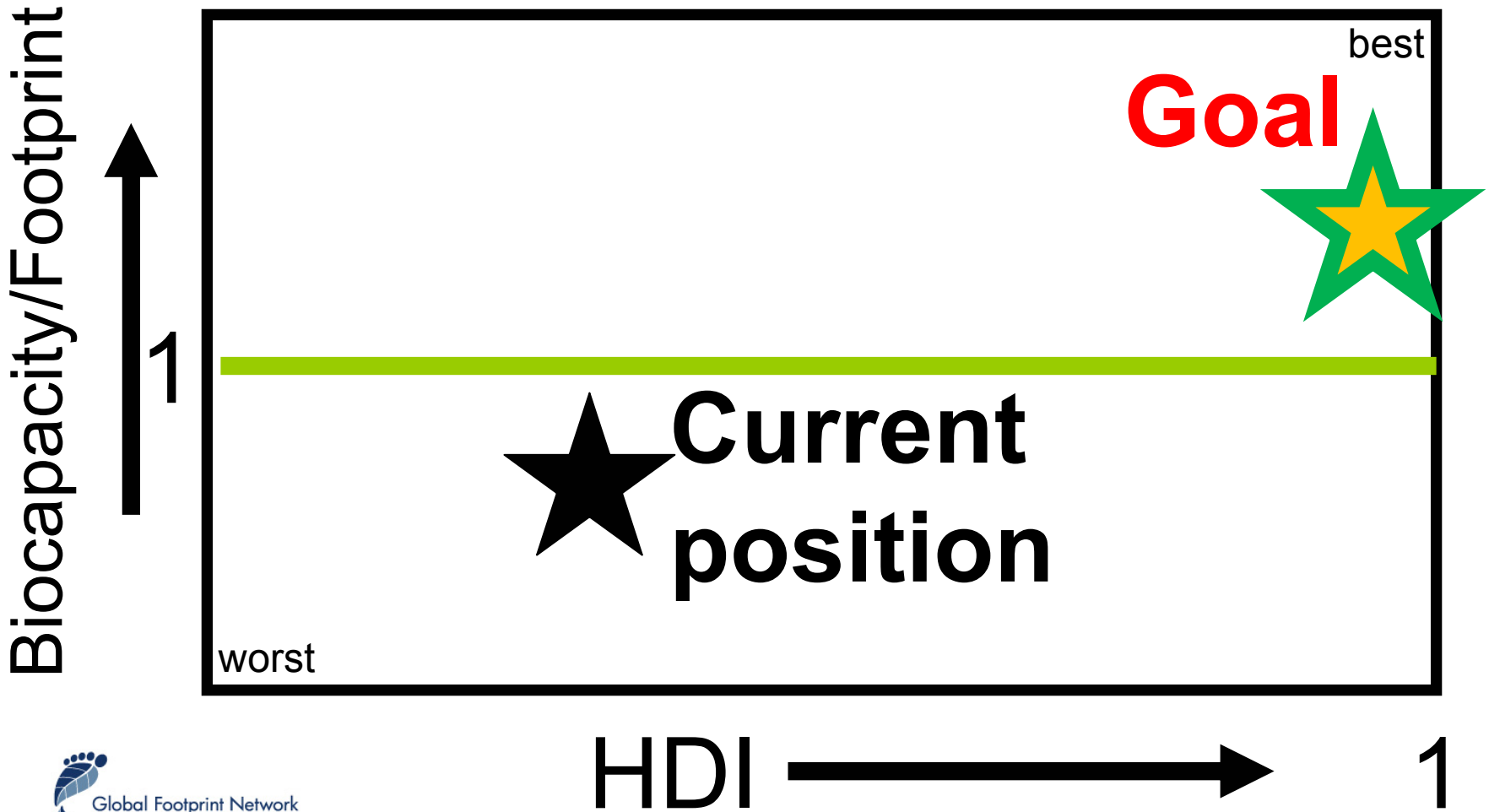

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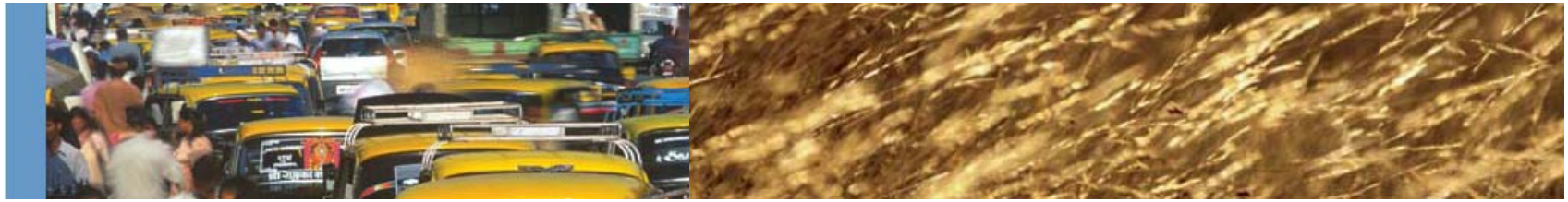

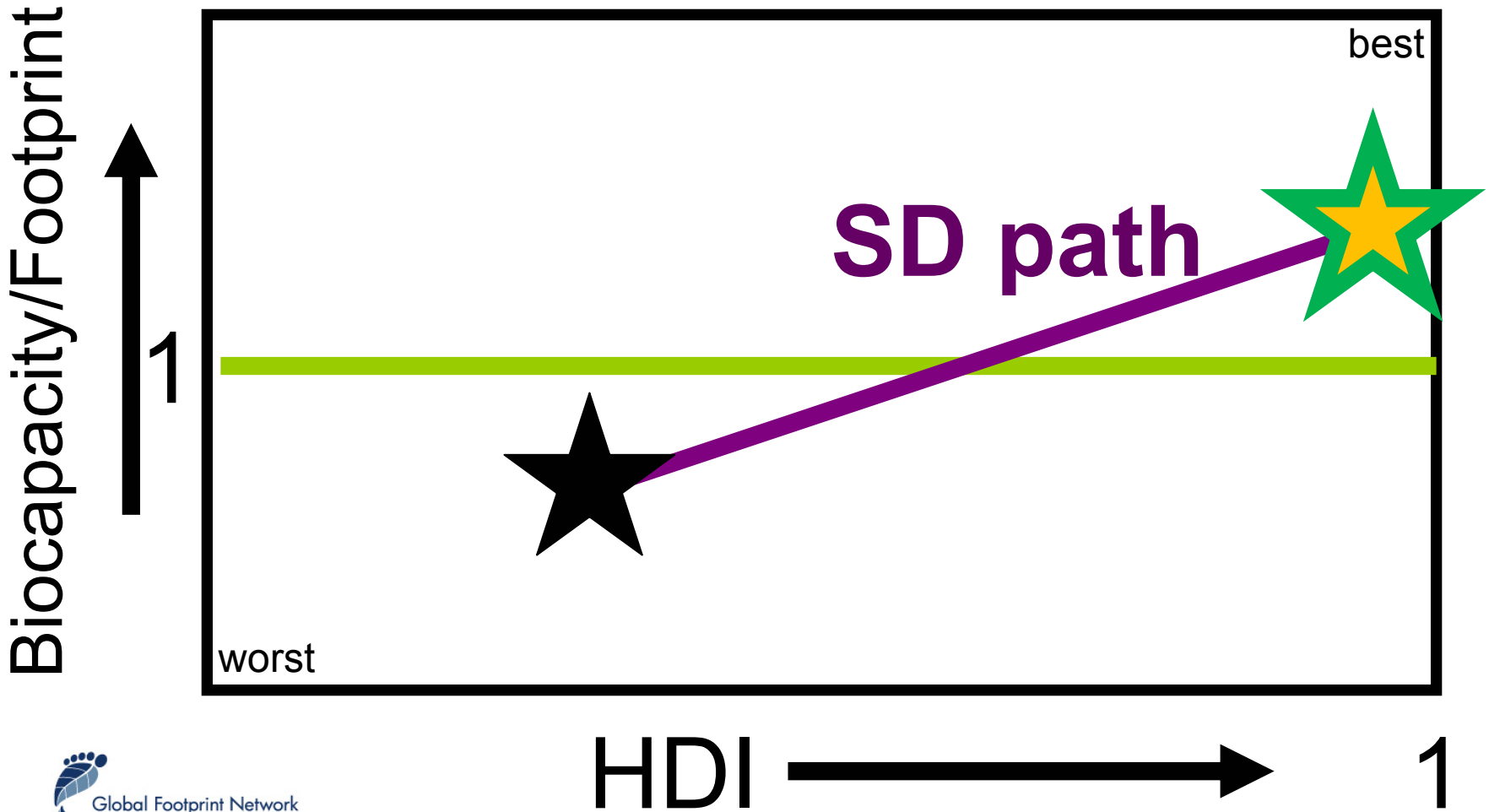

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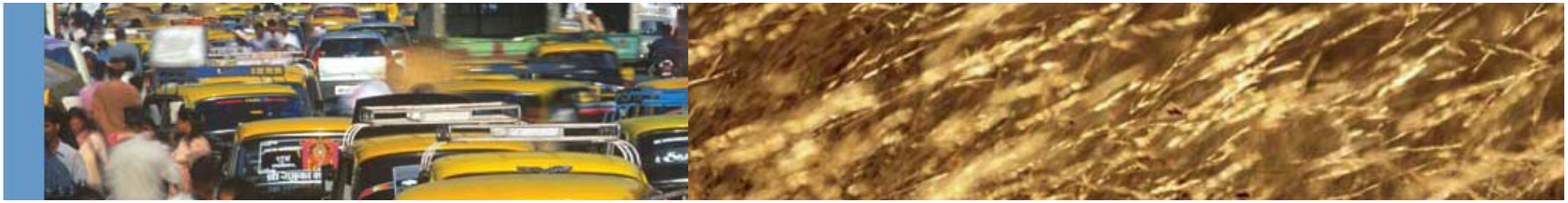

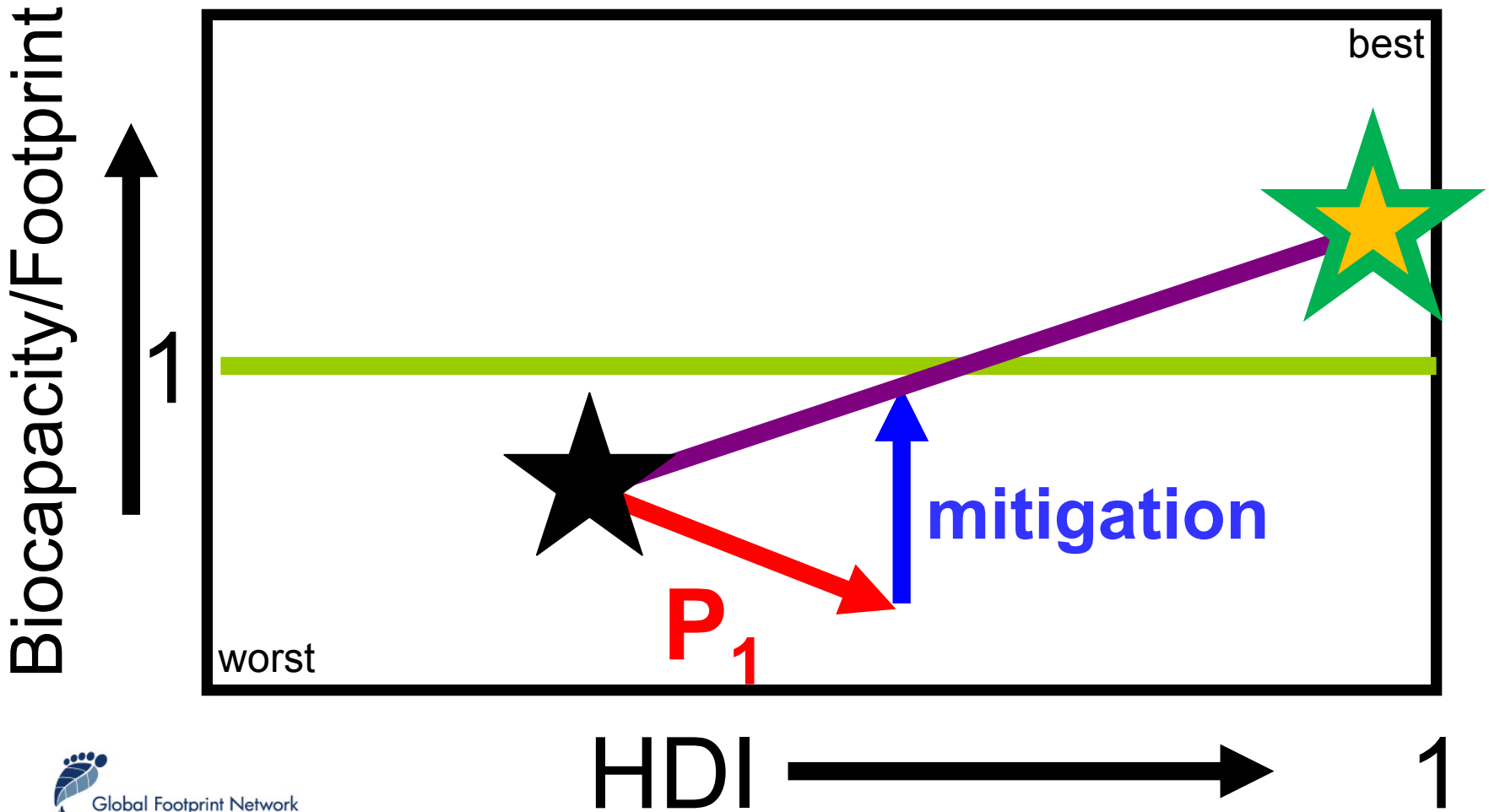

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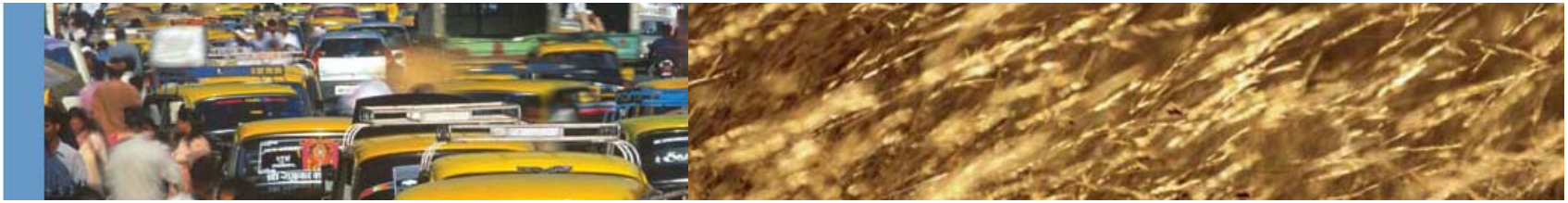
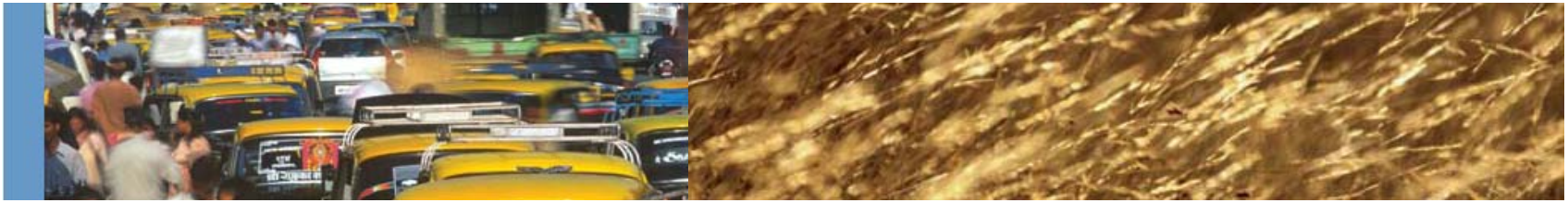
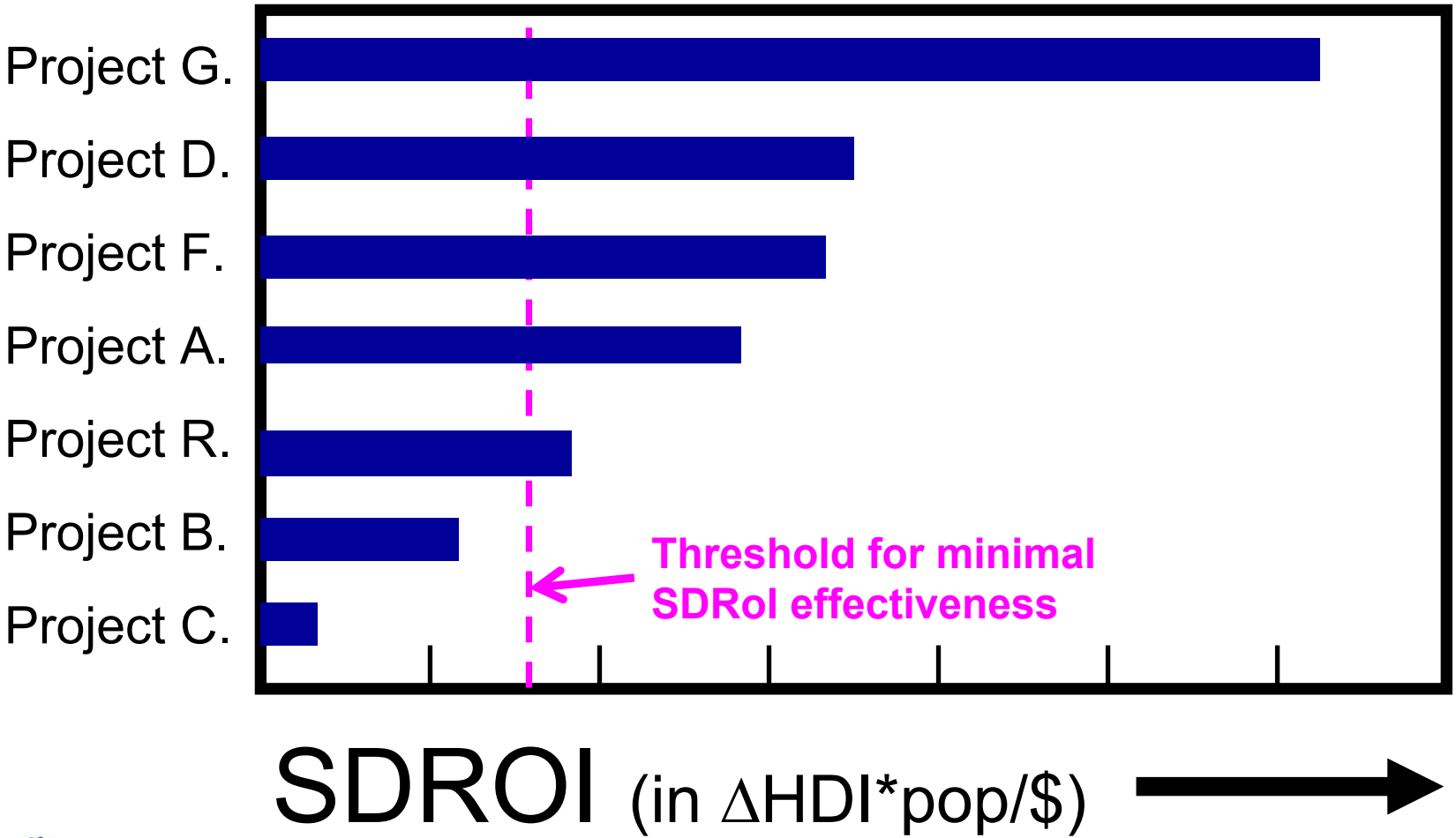


$$\text{SDROI} = \frac{\Delta\ \text{HDI} * \text{pop}}{\text{Inv} + \text{Mit}}$$





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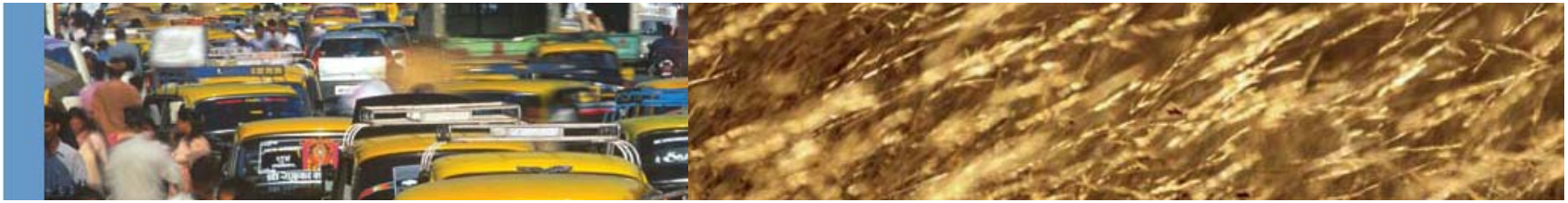


Resilience

Diversity and Redundancy

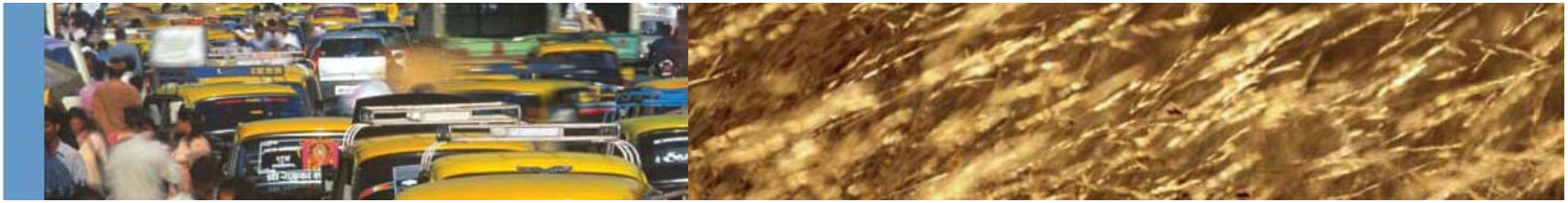
Modular Networks,

Responsive, Regulatory Feedbacks

Biocapacity/Footprint:
    Enough resources,
HDI – outcome - enough social capital

United Nations Educational, Scientific and Cultural Organization

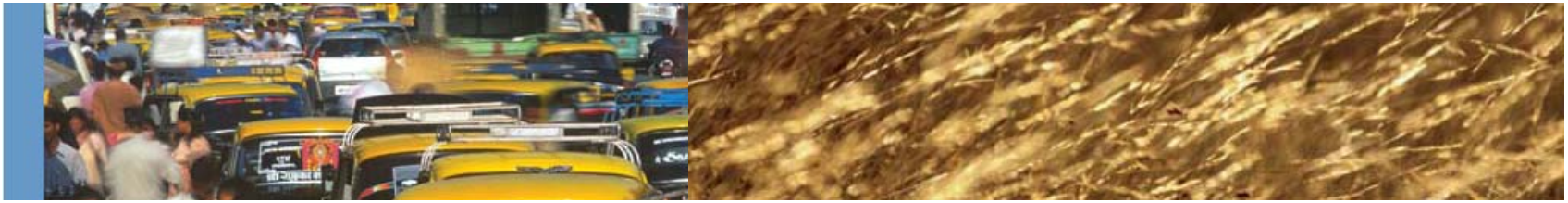
www.footprintnetwork.org/med



Finance Initiative:
Safeguarding Investments

Bond Traders:
Banks, Rating Agencies, Insurances, Governments

What's the evidence that resource constraints materially and substantively affect economic performance?



Competitiveness 2.0:
Helping Nations Succeed

Audience of 2000:
Senior career administrators in economic ministries

What do these Footprint and Biocapacity trends mean for your competitiveness?

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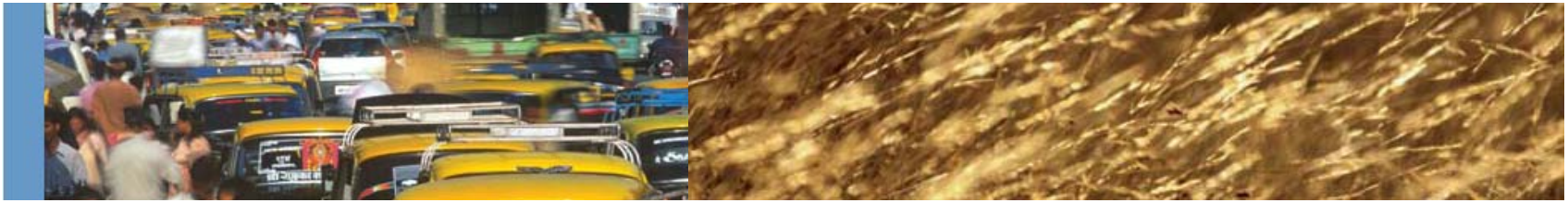

Environmental Policy:
Bringing Limits into Policy

NGOs, education, environment ministries

What do these Footprint and Biocapacity trends mean for your competitiveness?

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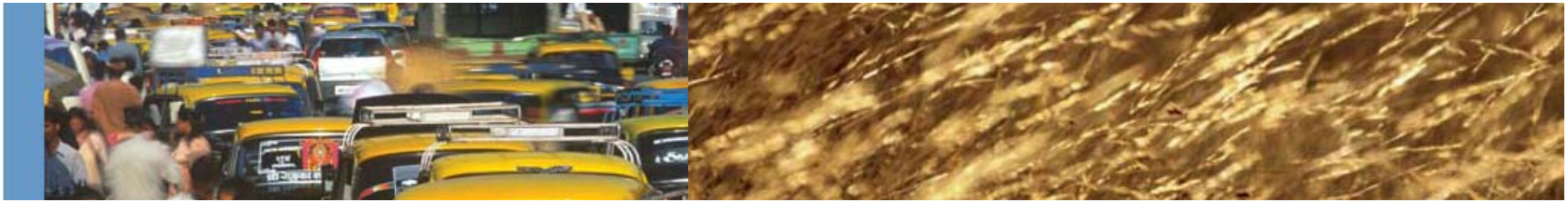
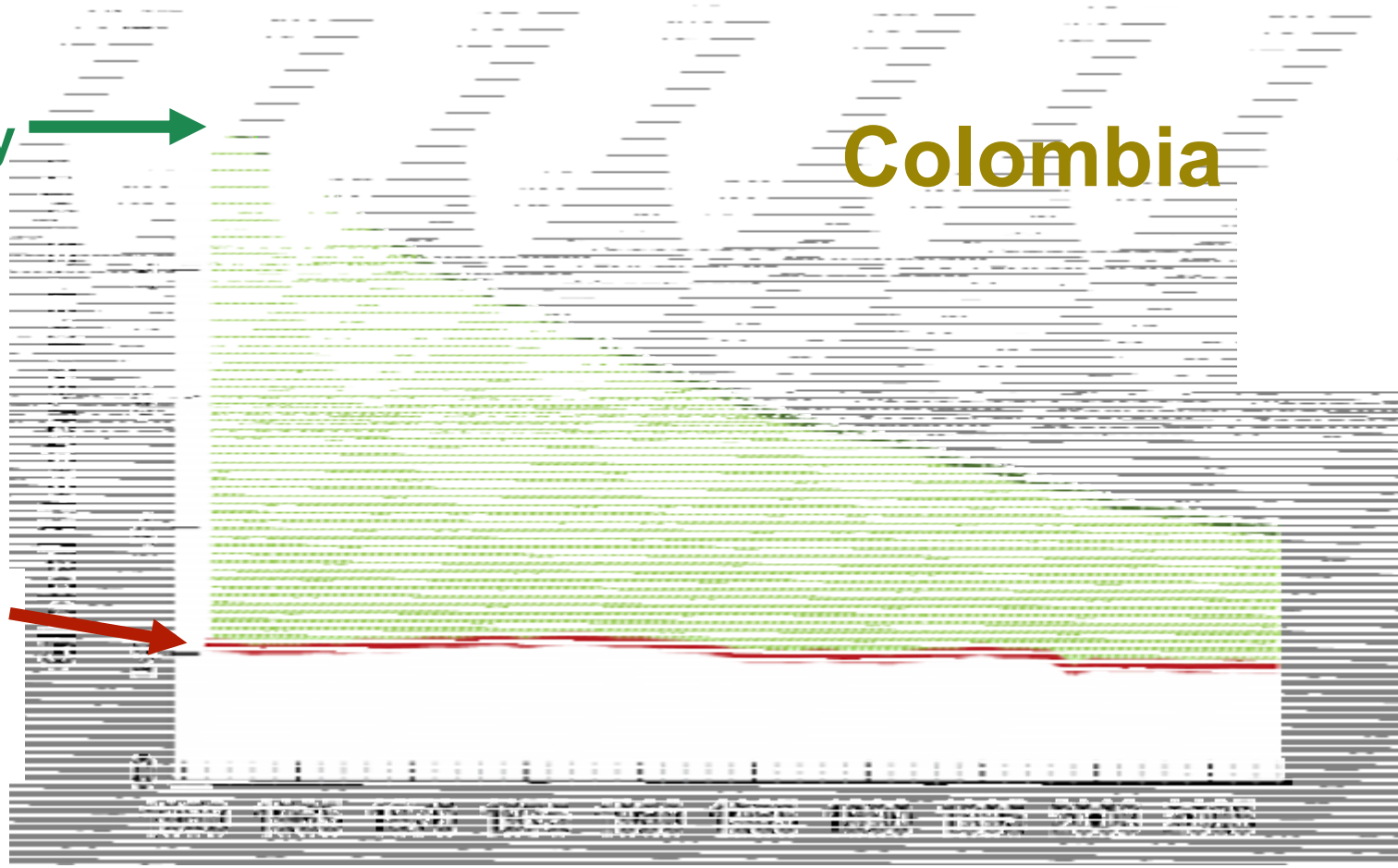


Colombia

Biocapacity per person

Ecological Footprint per person



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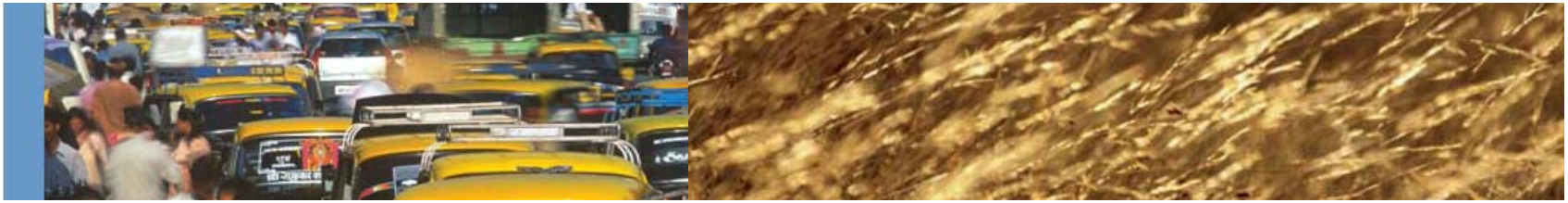
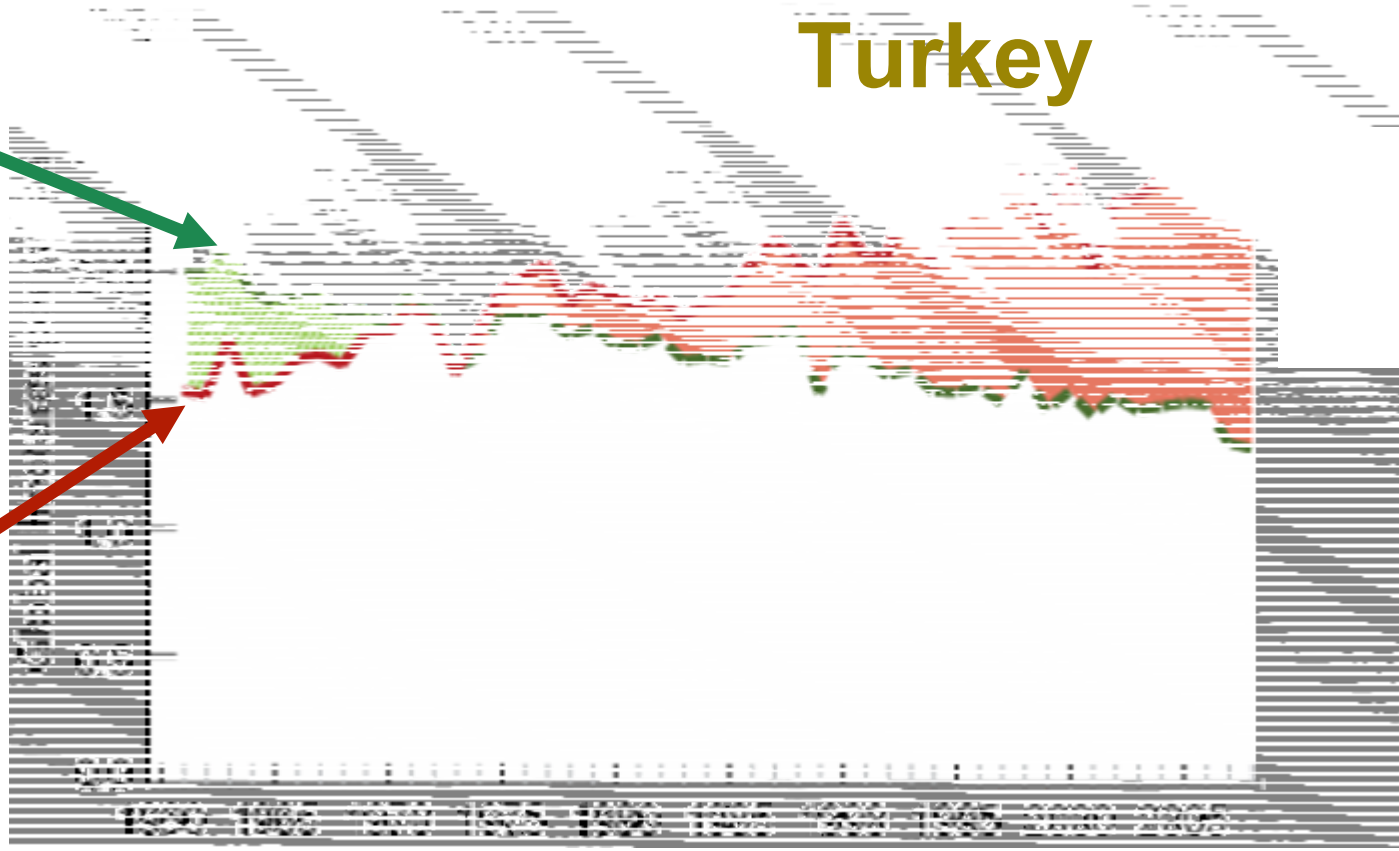


Turkey

Biocapacity per person

Ecological Footprint per person



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