

Living on One World



*Creating LOW footprint enterprises
- a consulting perspective*

Craig Simmons, Director & Co-founder Best Foot Forward

www.bestfootforward.com



Best Foot Forward
bringing sustainability down to earth

Prepared for FORESCENE workshop

Living on One World

LOW

*“Delivering a high quality of life
within the means of nature”*



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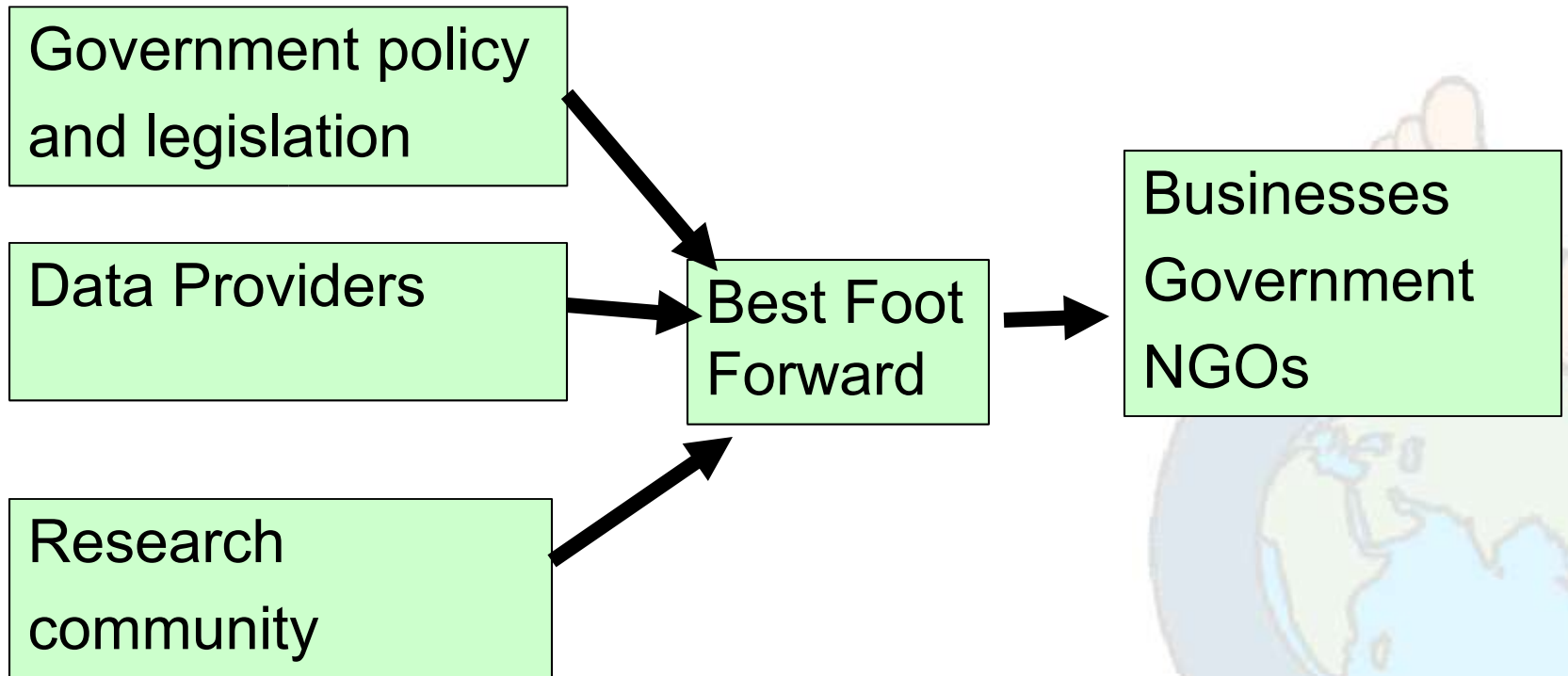
10 minutes is a challenge but...

**...same as the attention span of a
typical CEO or politician**

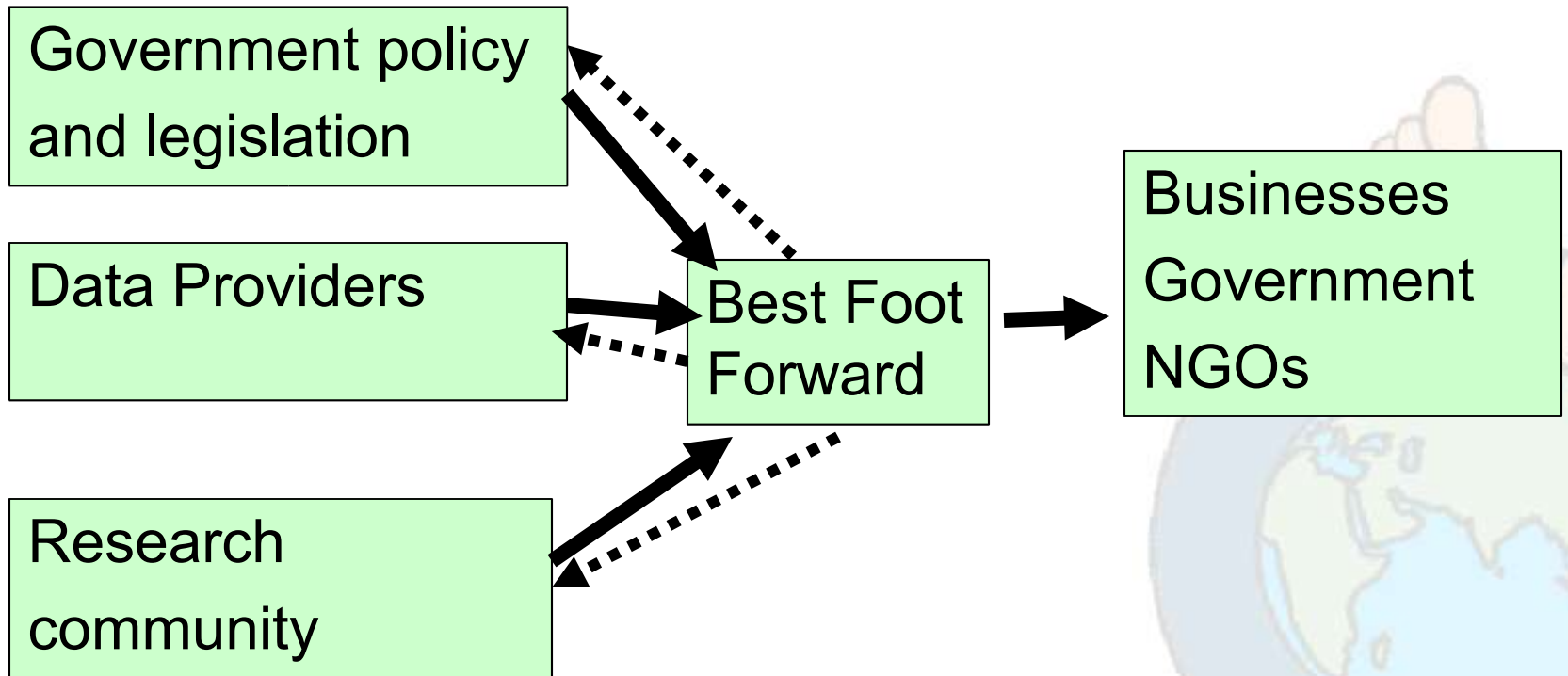


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Consultancy Perspective

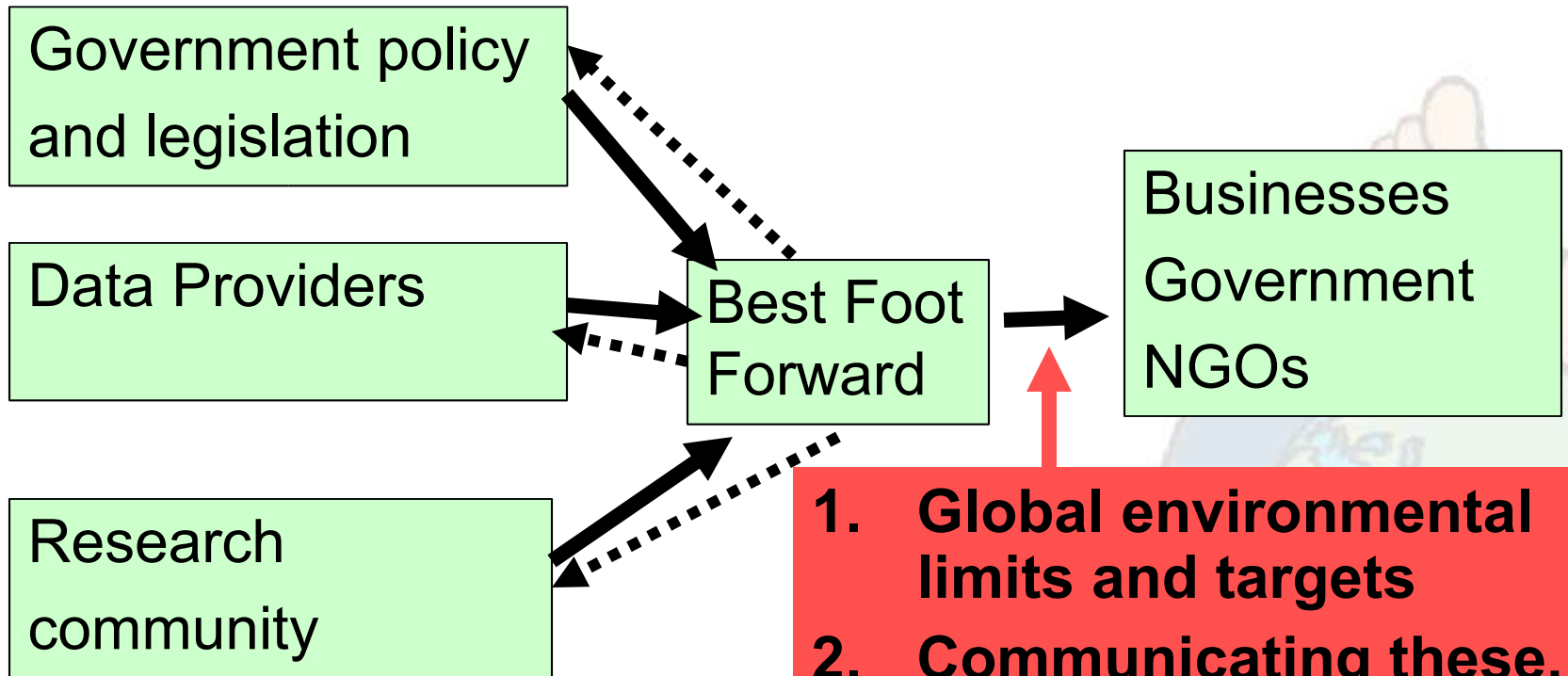


Consultancy Perspective



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Consultancy Perspective

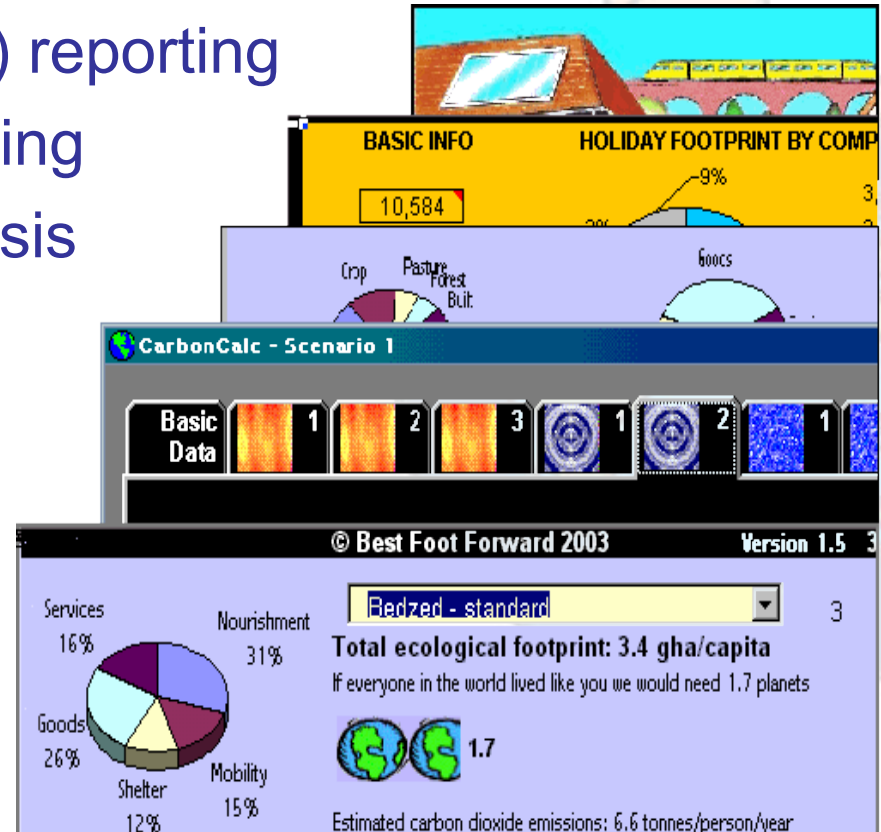


1. **Global environmental limits and targets**
2. **Communicating these, and applying them, to business**
3. **Selection of case studies**

Best Foot Forward



- Environmental analysts – use analytical techniques such as:
 - greenhouse gas (carbon) reporting
 - natural resource accounting
 - ecological footprint analysis
- Consultancy
- Training: Intro & Masterclass
- Partner Programme



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Queen's Award



THE QUEEN'S AWARDS
FOR ENTERPRISE:
SUSTAINABLE DEVELOPMENT
2005

*"the UK's most prestigious awards
for business performance"*

www.queensawards.org.uk

Award for:
*"continuous achievement in
sustainable development "*

*"delivering performance
improvement for over 80 clients"*

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Queen's Award



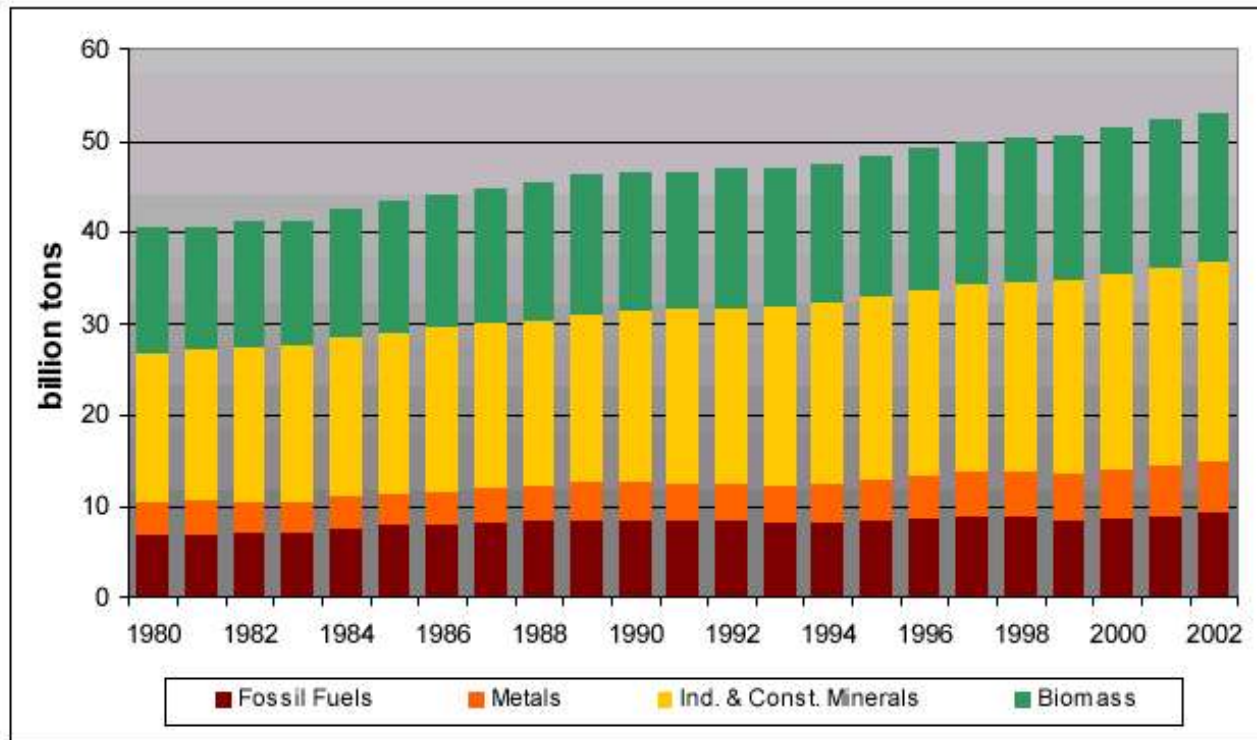
1. Global environmental limits and targets



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Global Trends: Materials

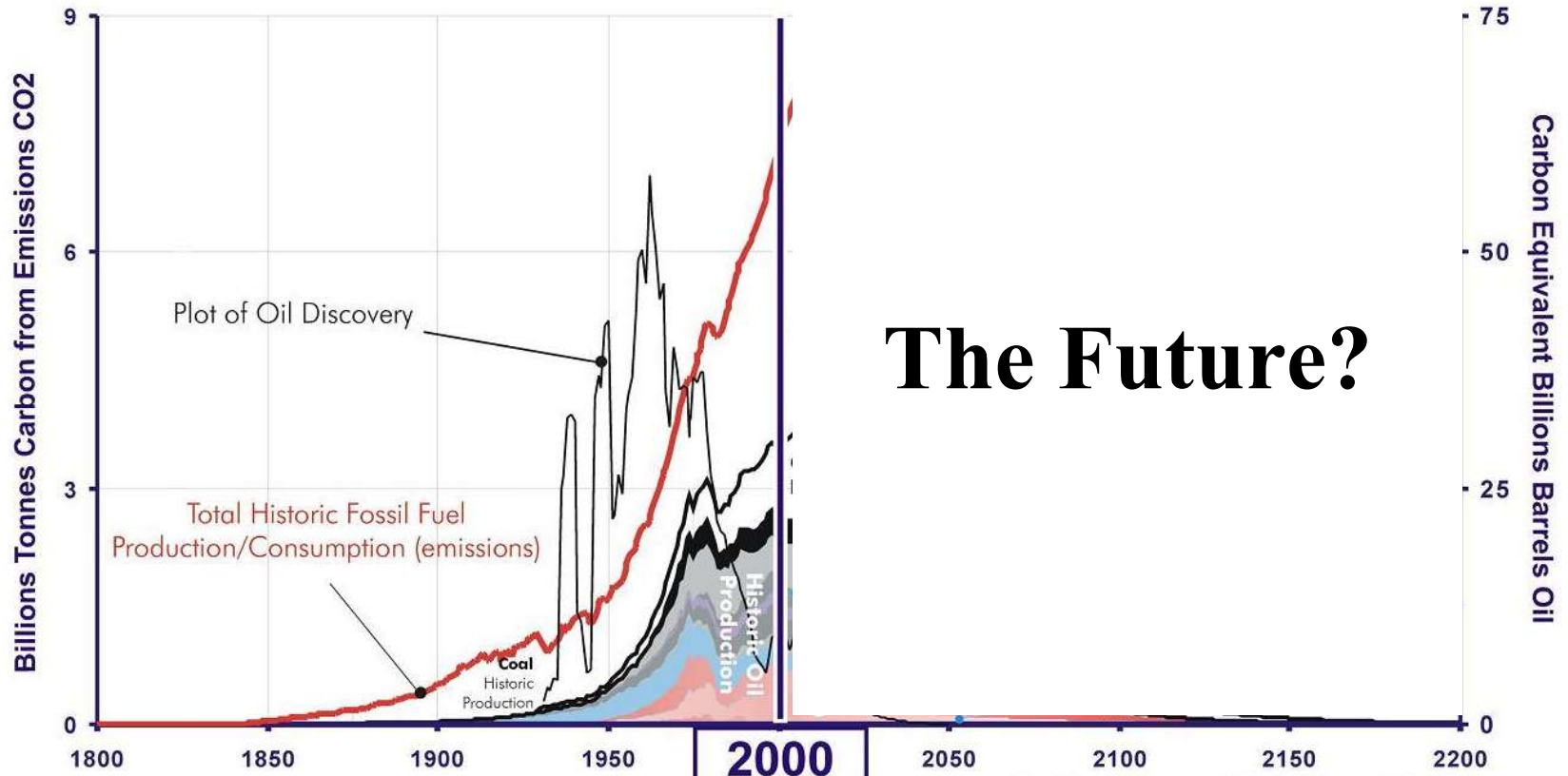


Source: MOSUS (www.mosus.net)



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Global Trends: Fossil Energy



The Future?

Source: Global Commons Institute
www.gci.org.uk



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Global Problems

“nearly two thirds of the services provided by nature to humankind are found to be in decline worldwide”



Ecosystems in decline

Ecosystems - mixed

Ecosystems improving

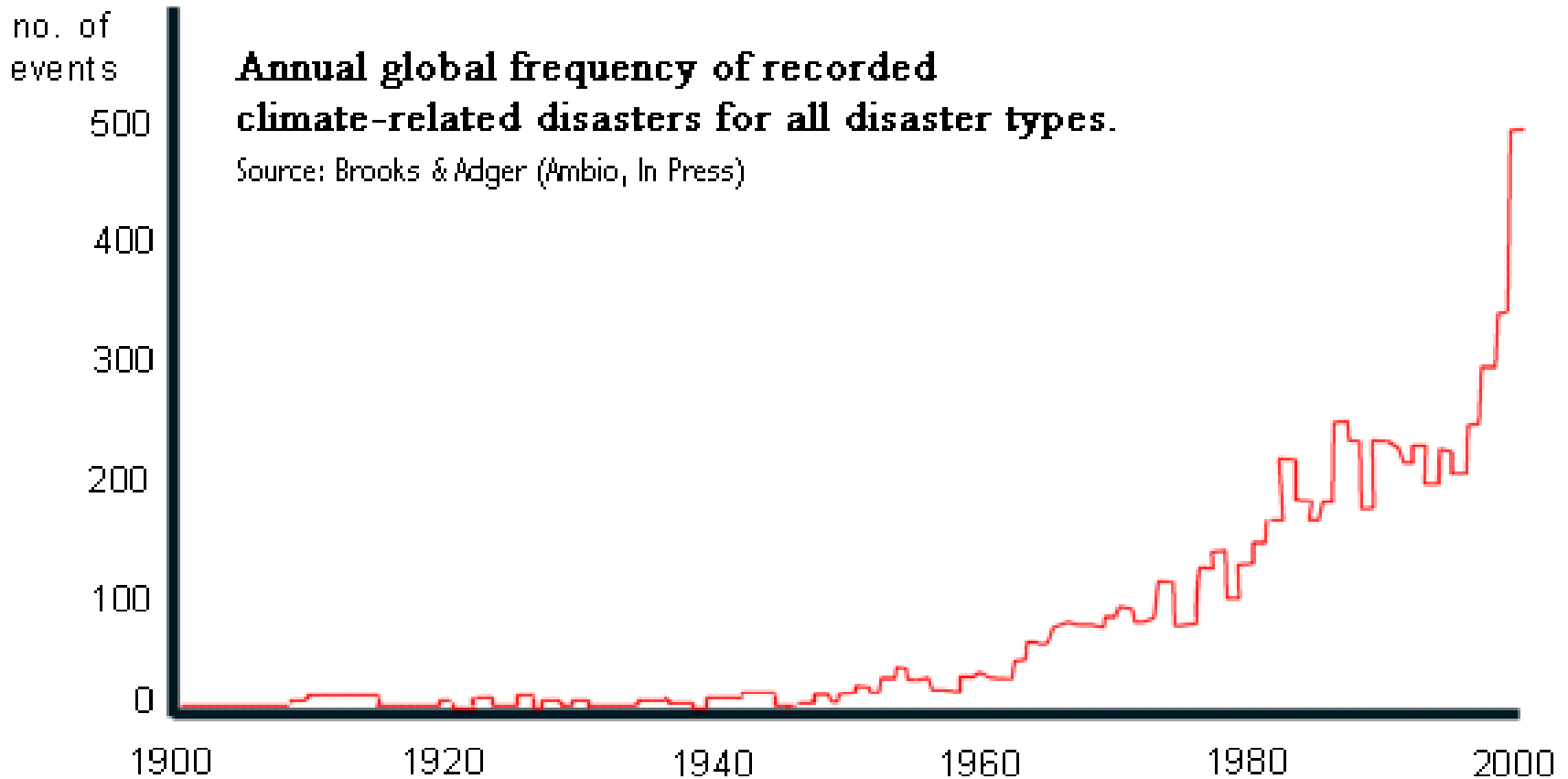
Source: Millennium Ecosystem Assessment 2005

www.millenniumassessment.org



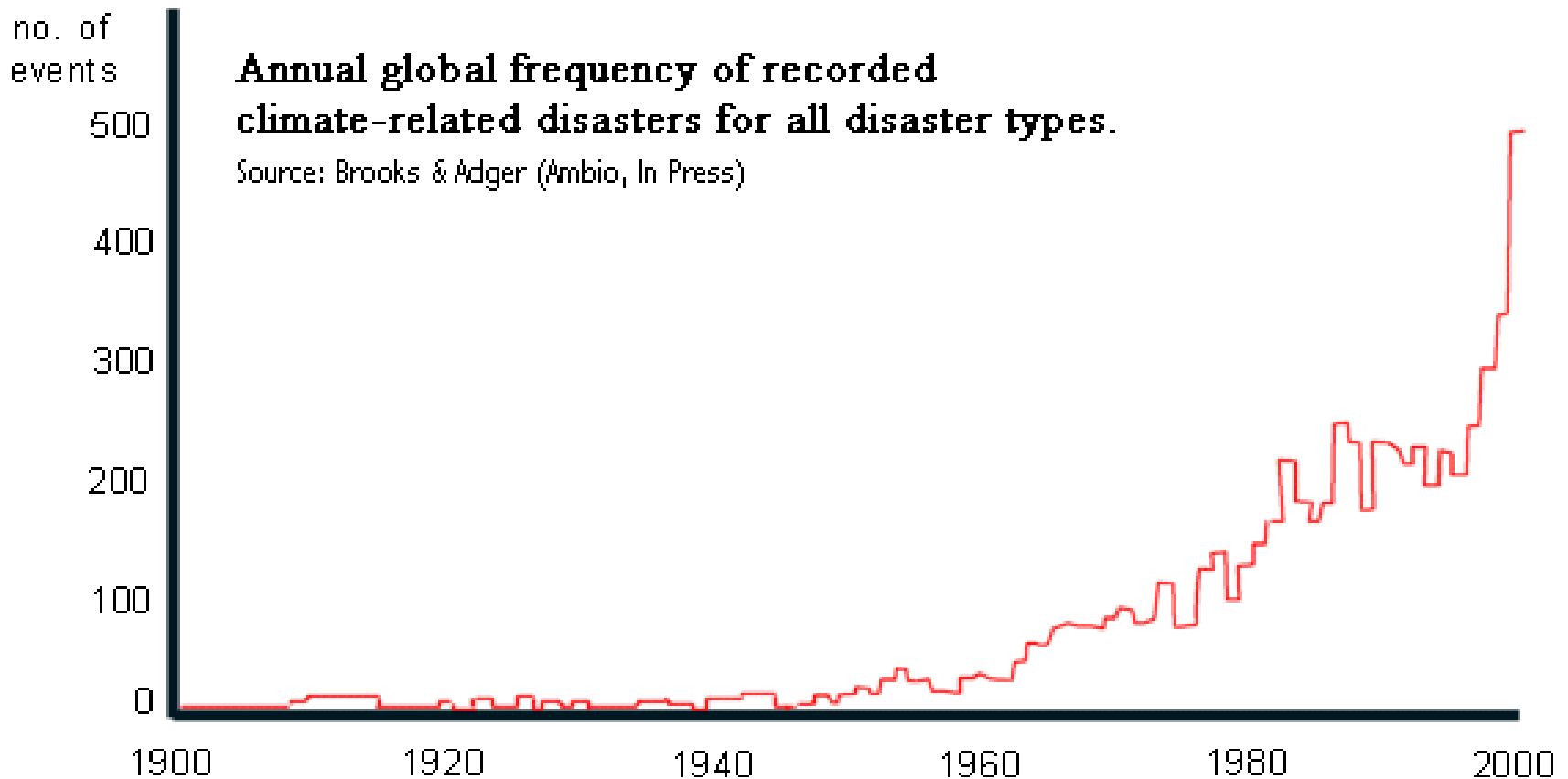
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Global Problems: Climate Disasters



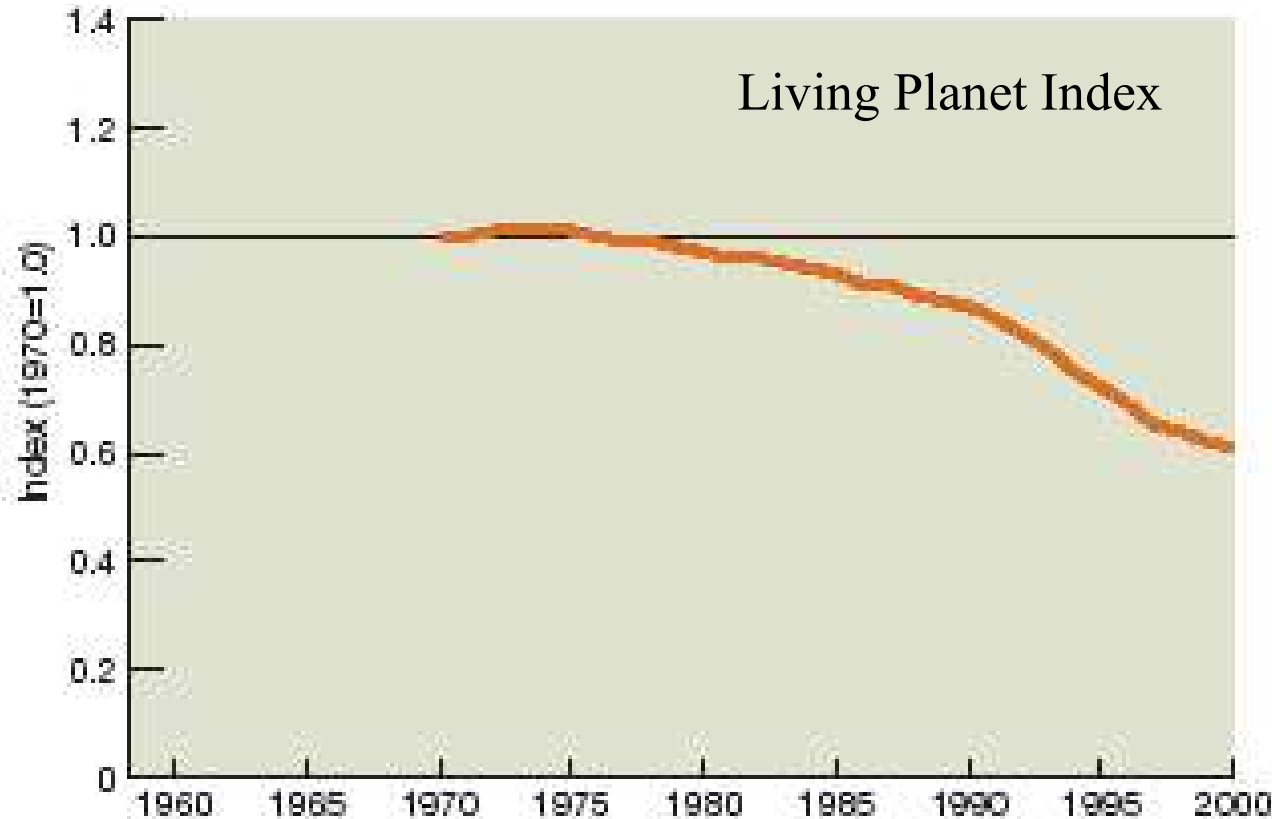
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Global Problems: Climate Disasters



For every person living a high carbon lifestyle – 10 others will be affected by a climate-change related disaster.

Global Problems: Biodiversity



Source: WWF 2004 (www.panda.org)



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Global Problems: Footprint



Source: WWF 2004 (www.panda.org)

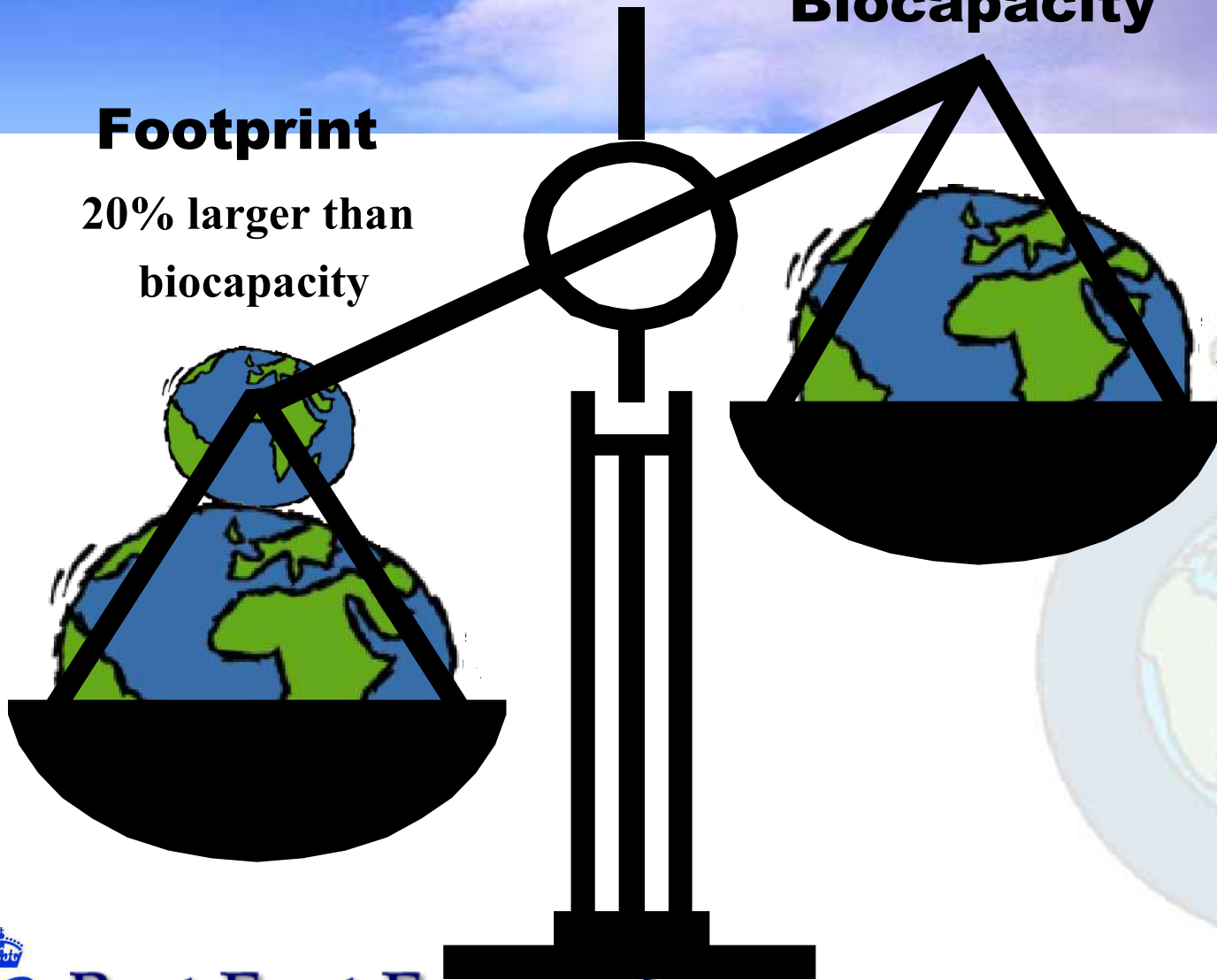


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Biocapacity

Footprint

**20% larger than
biocapacity**

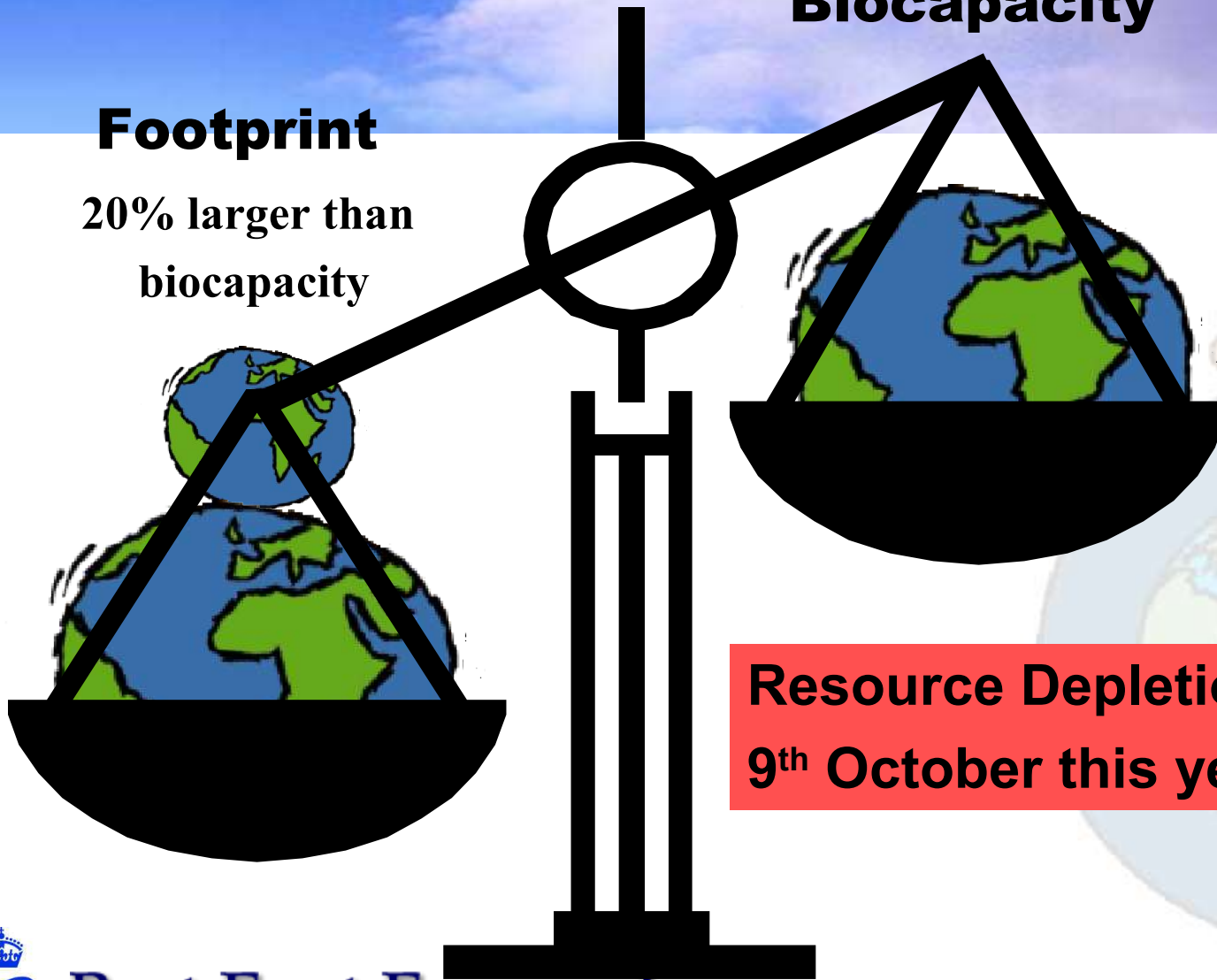


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Biocapacity

Footprint

**20% larger than
biocapacity**



**Resource Depletion Day:
9th October this year**



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Leads to per capita targets

< 2.1 tonnes CO₂ per person (1.4 tCO₂ by 2050)

< 1.8 gha (ecological footprint) per person (1.2 gha by 2050)

Current modern urban lifestyle (3, 4 or 5 planets)



LOW footprint lifestyle (1 planet)

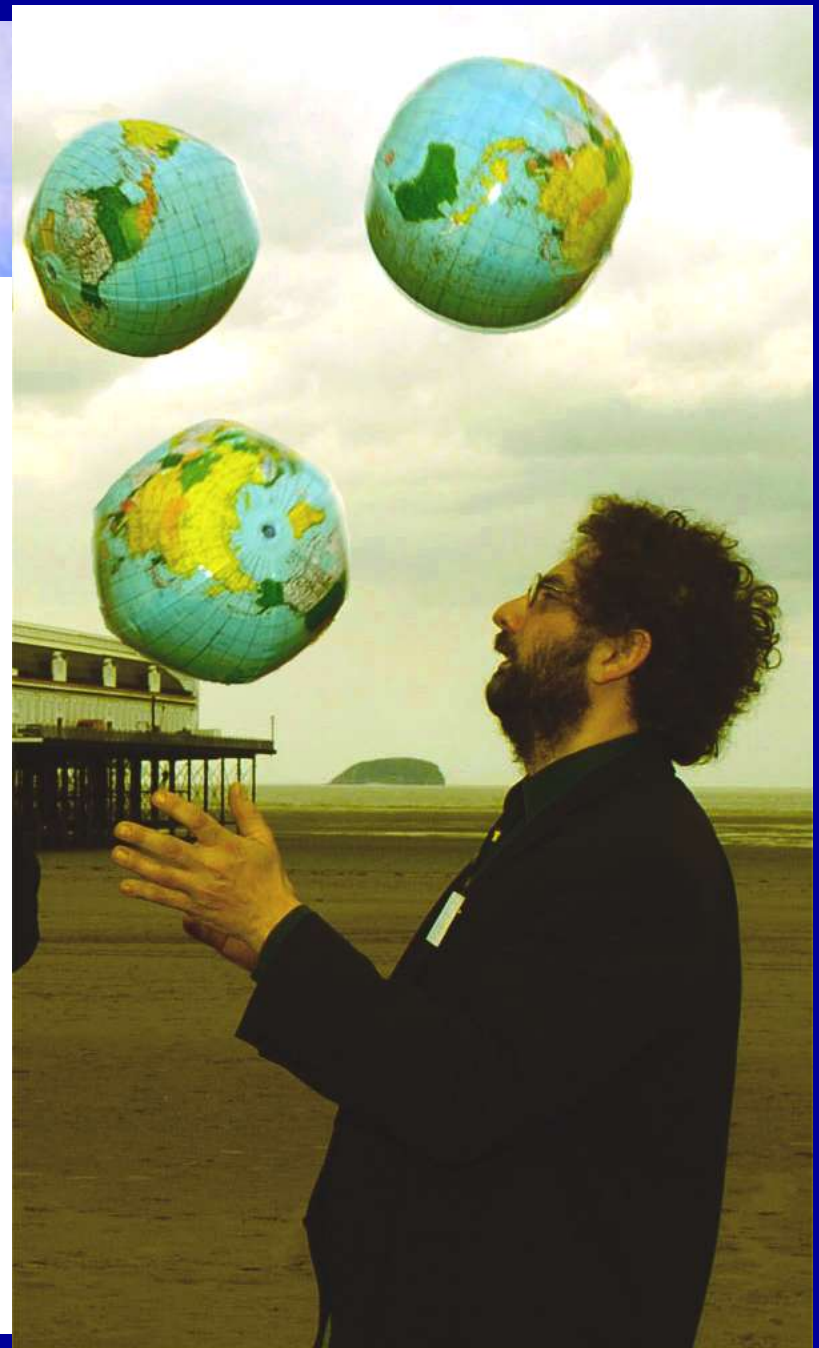


About 80% - 90% reductions in resource consumption needed by 2050




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Making a three planet economy work when you only have one world is a difficult juggling act!



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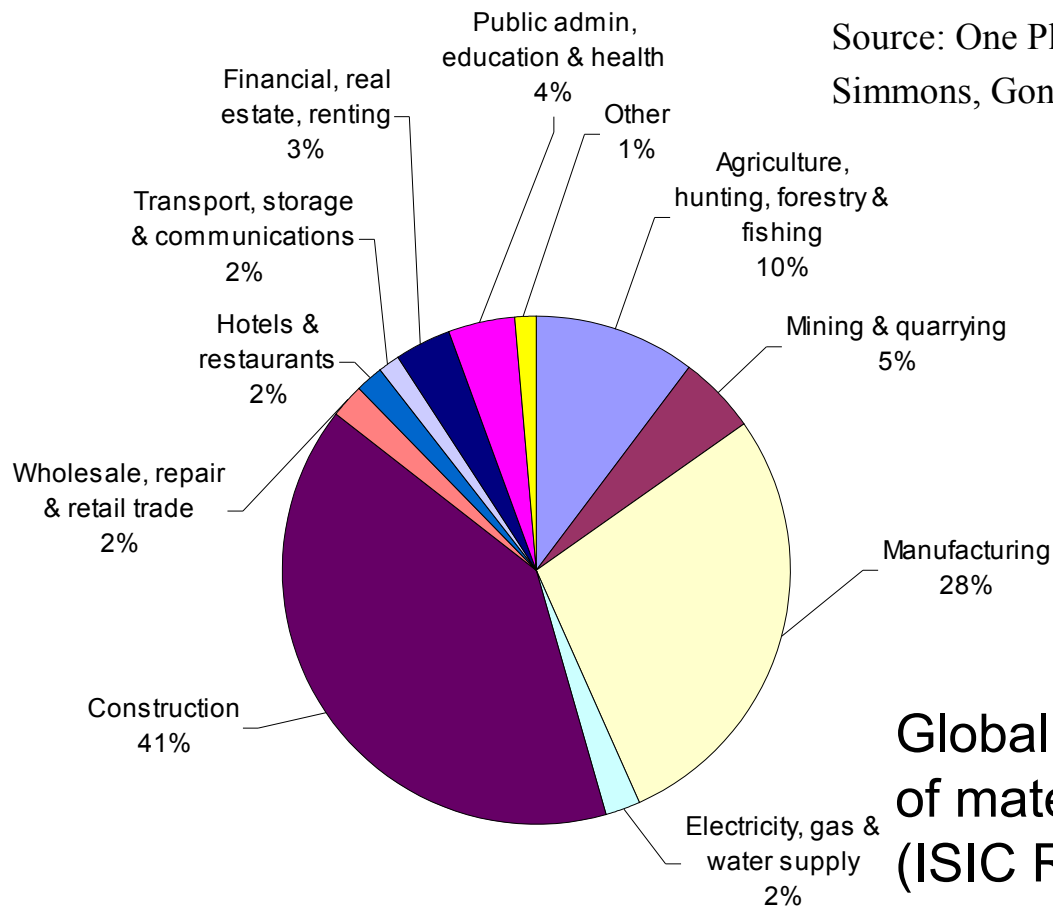
2. Communicating these targets and limits, and applying them, to business



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Materials/footprint/carbon dioxide by global industry sector

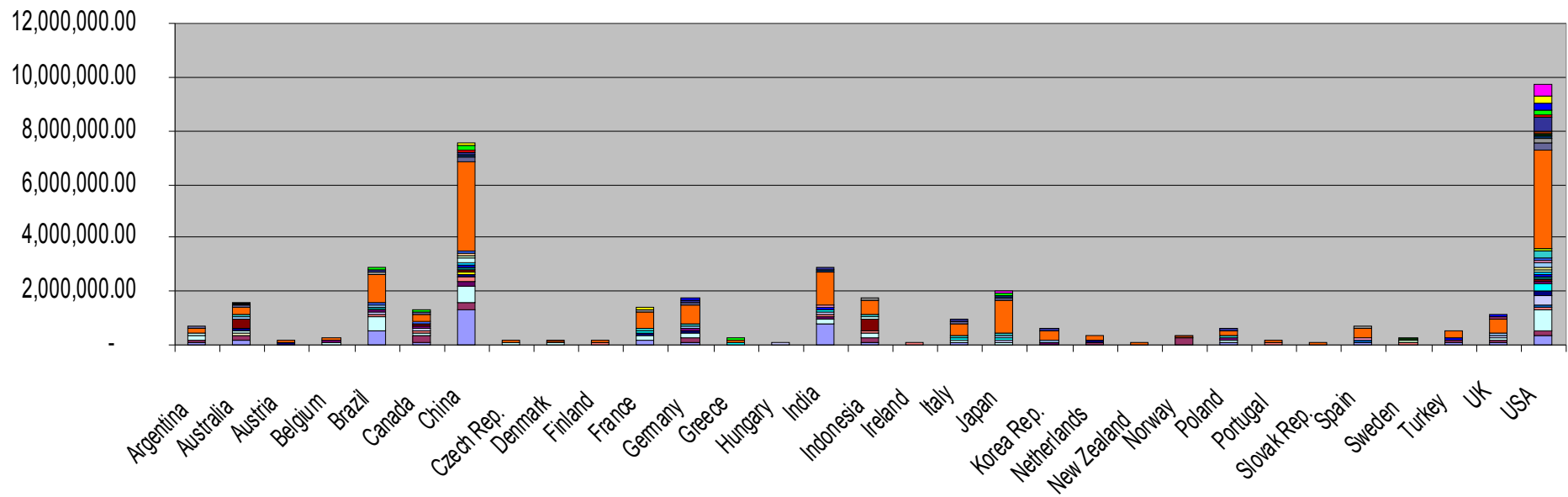
Source: One Planet Business Programme (WWF)
Simmons, Gonzalez and Lewis (2006)



Global allocation of materials (tonnes) to sectors (ISIC Rev 1 classification)

Note: 48 sectors aggregated for clarity into ISIC classes

Materials/CO2/footprint by Industry Sector by Country



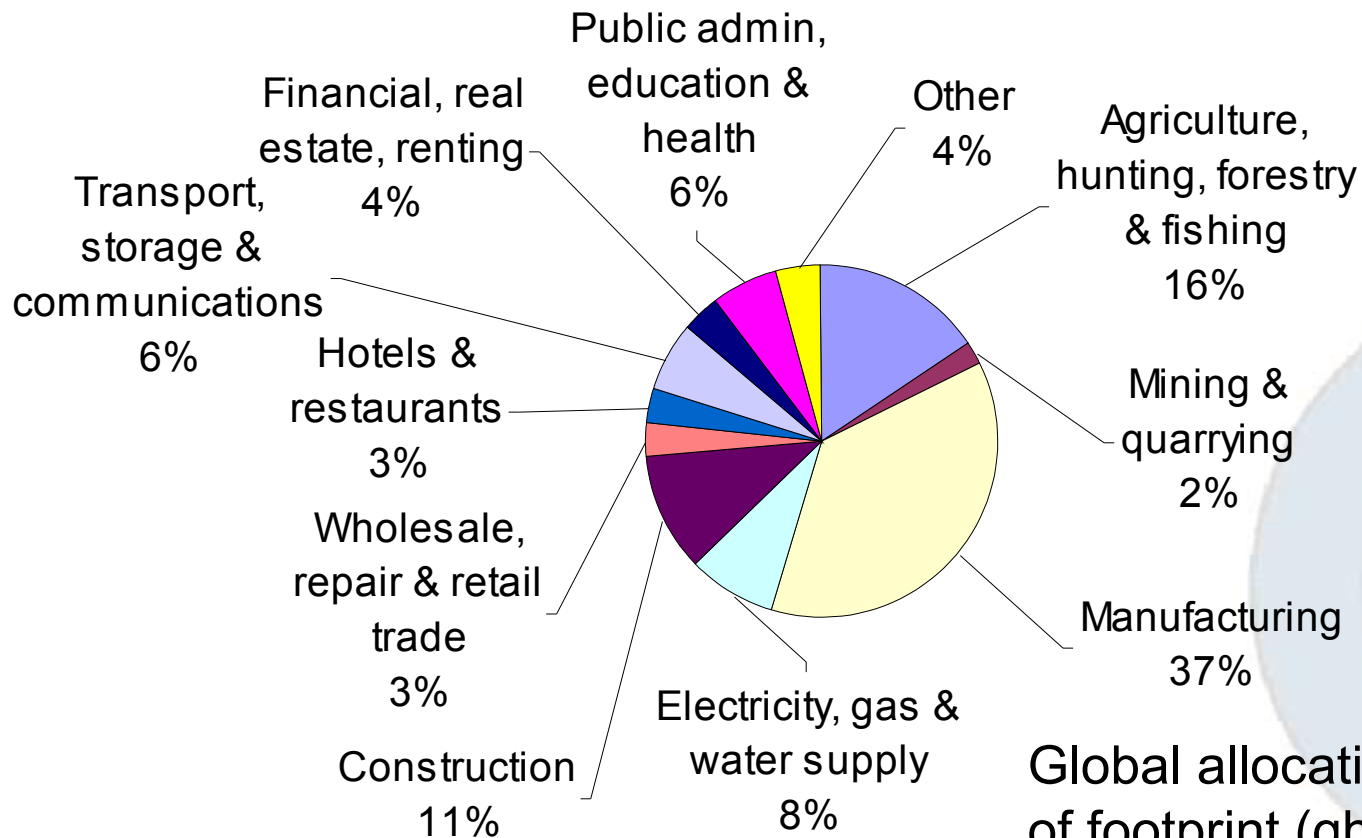
Available for 31 Countries & 48 Sectors (units 000's tonnes)

IO Sector 1 IO Sector 2 IO Sector 3 IO Sector 4 IO Sector 5 IO Sector 6 IO Sector 7 IO Sector 8 IO Sector 9 IO Sector 10 IO Sector 11 IO Sector 12 IO Sector 13 IO Sector 14 IO Sector 15 IO Sector 16 IO Sector 17 IO Sector 18 IO Sector 19 IO Sector 20 IO Sector 21 IO Sector 22 IO Sector 23 IO Sector 24 IO Sector 25 IO Sector 26 IO Sector 27 IO Sector 28 IO Sector 29 IO Sector 30 IO Sector 31 IO Sector 32 IO Sector 33 IO Sector 34 IO Sector 35 IO Sector 36 IO Sector 37 IO Sector 38 IO Sector 39 IO Sector 40 IO Sector 41 IO Sector 42 IO Sector 43 IO Sector 44 IO Sector 45 IO Sector 46 IO Sector 47 IO Sector 48

Source: One Planet Business Programme (WWF)
 Simmons, Gonzalez and Lewis (2006)



Global Footprint by industry sector



Global allocation of footprint (gha) to sectors (ISIC Rev 1)

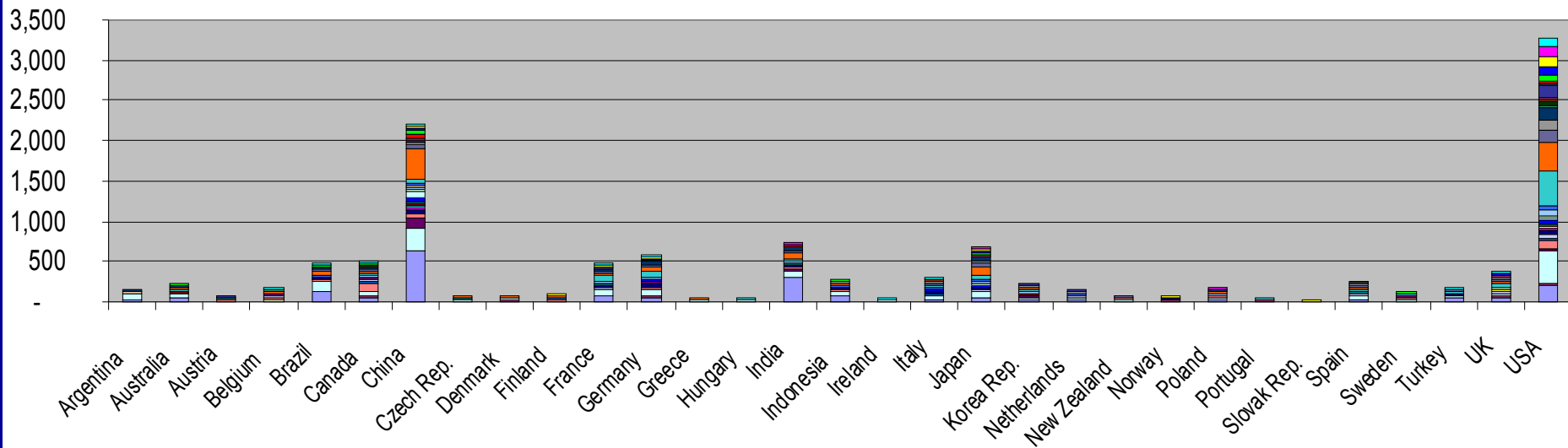
Note: 48 sectors aggregated for clarity into ISIC classes



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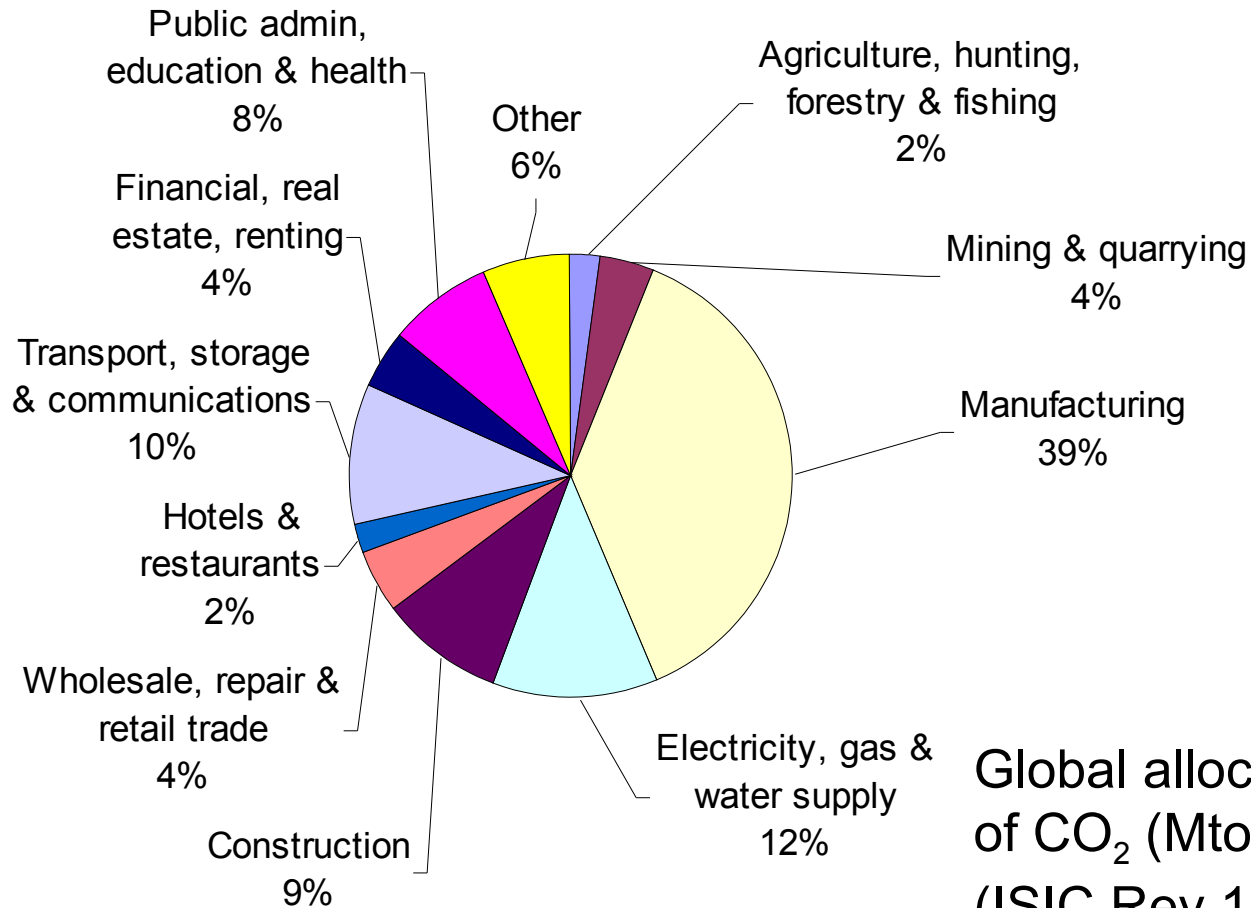
Global Footprint by sector by country

Graph 1: Total Requirements - Footprint (millions gha)



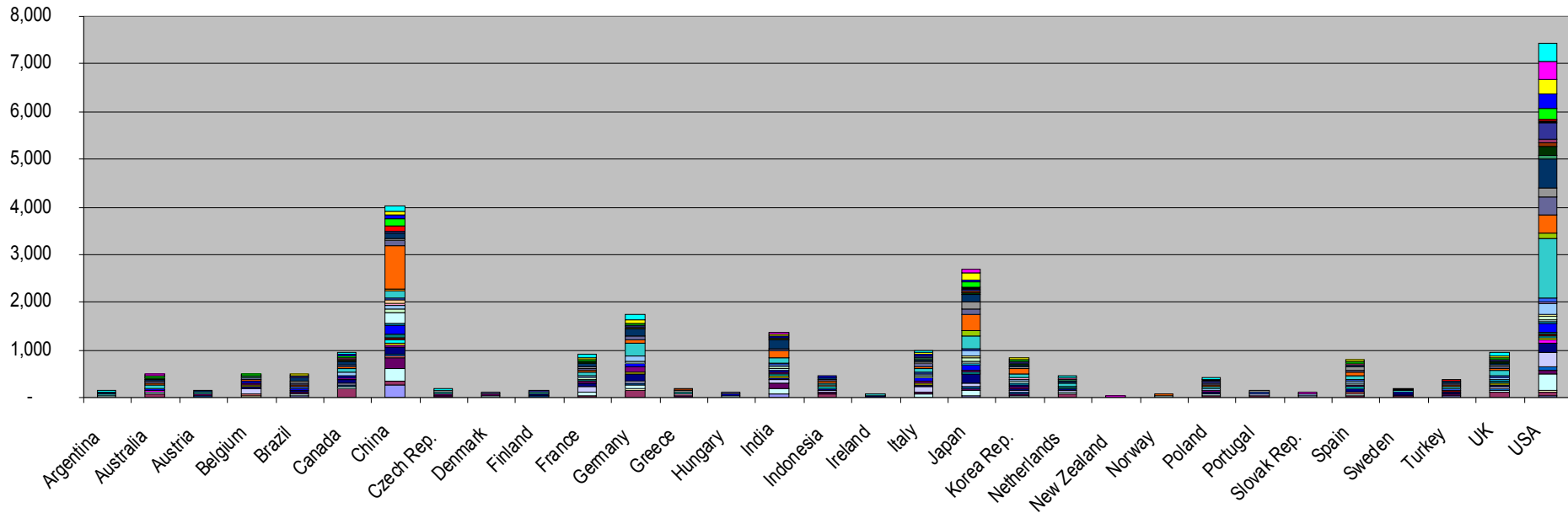
- (units millions global hectares)
- IO Sector 1 IO Sector 2 IO Sector 3 IO Sector 4 IO Sector 5 IO Sector 6 IO Sector 7 IO Sector 8 IO Sector 9 IO Sector 10 IO Sector 11 IO Sector 12
 - IO Sector 13 IO Sector 14 IO Sector 15 IO Sector 16 IO Sector 17 IO Sector 18 IO Sector 19 IO Sector 20 IO Sector 21 IO Sector 22 IO Sector 23 IO Sector 24
 - IO Sector 25 IO Sector 26 IO Sector 27 IO Sector 28 IO Sector 29 IO Sector 30 IO Sector 31 IO Sector 32 IO Sector 33 IO Sector 34 IO Sector 35 IO Sector 36
 - IO Sector 37 IO Sector 38 IO Sector 39 IO Sector 40 IO Sector 41 IO Sector 42 IO Sector 43 IO Sector 44 IO Sector 45 IO Sector 46 IO Sector 47 IO Sector 48

Global CO₂ emissions by industry sector



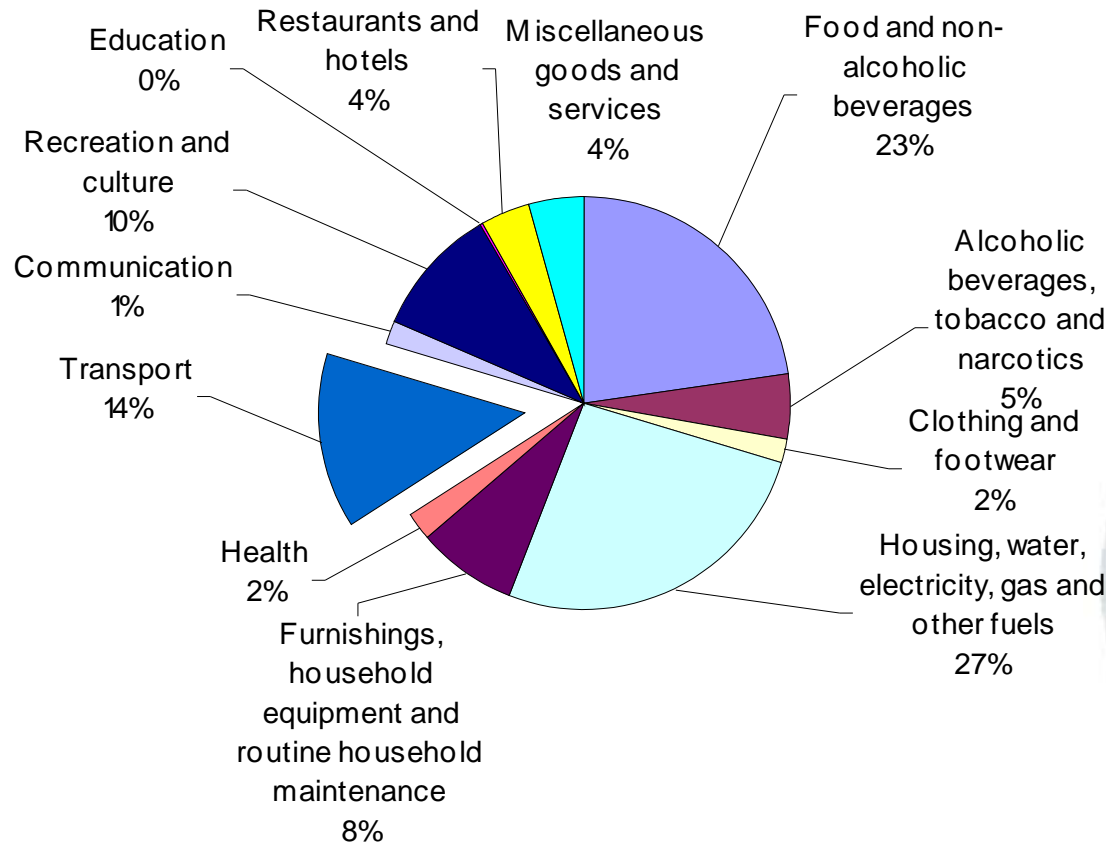
Global allocation of CO₂ (Mtonnes) to sectors (ISIC Rev 1)
Note: 48 sectors aggregated for clarity into ISIC classes

CO₂ Emissions by sector by country



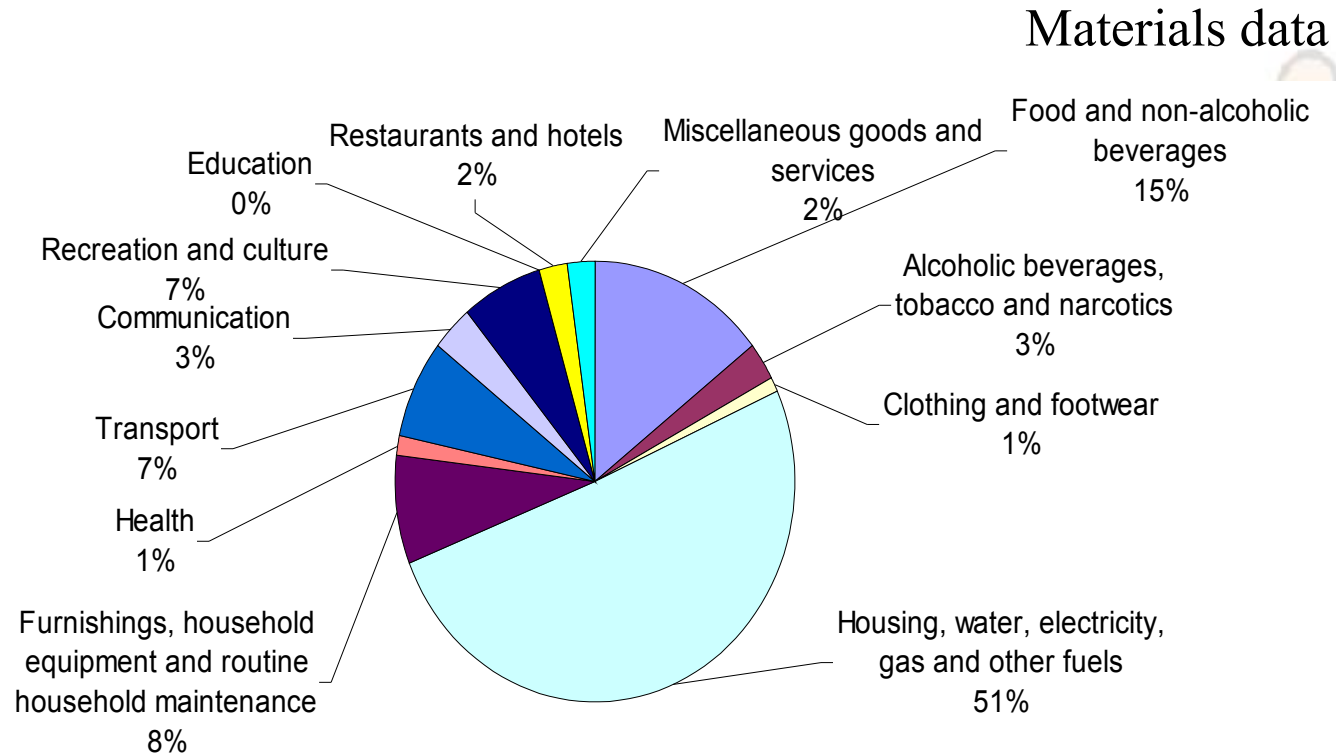
(units millions tonnes)

Mapping production to consumption - linking to per capita targets



Footprint data
- also available for
CO2 and materials)

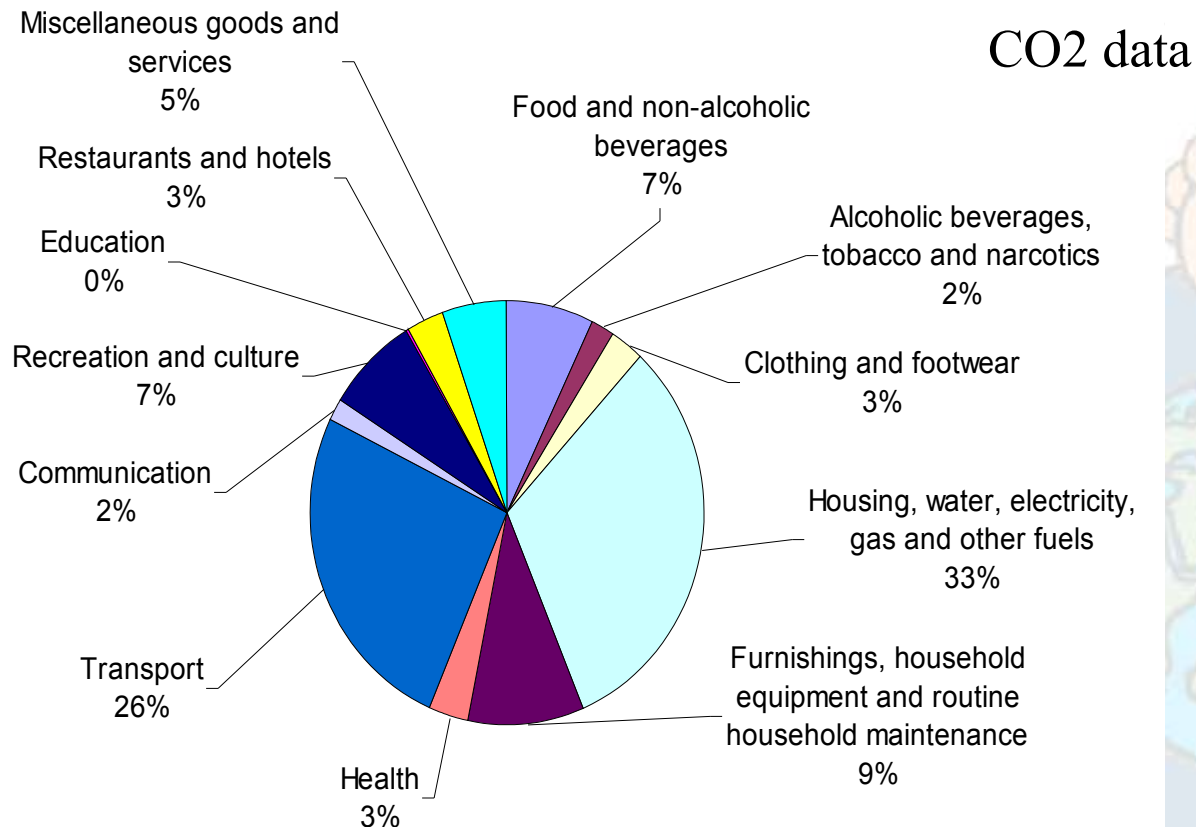
Mapping sectors to consumption categories – linking to per capita targets



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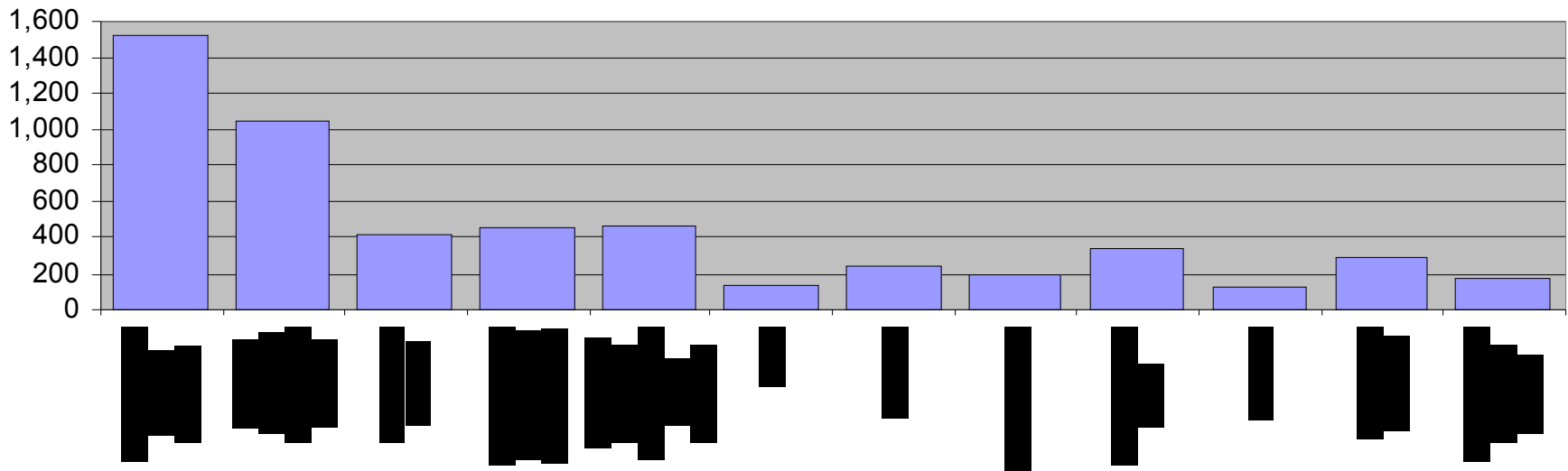
Summary CIOCOP classification

Mapping sectors to consumption categories – linking to per capita targets



Footprint/\$ intensities

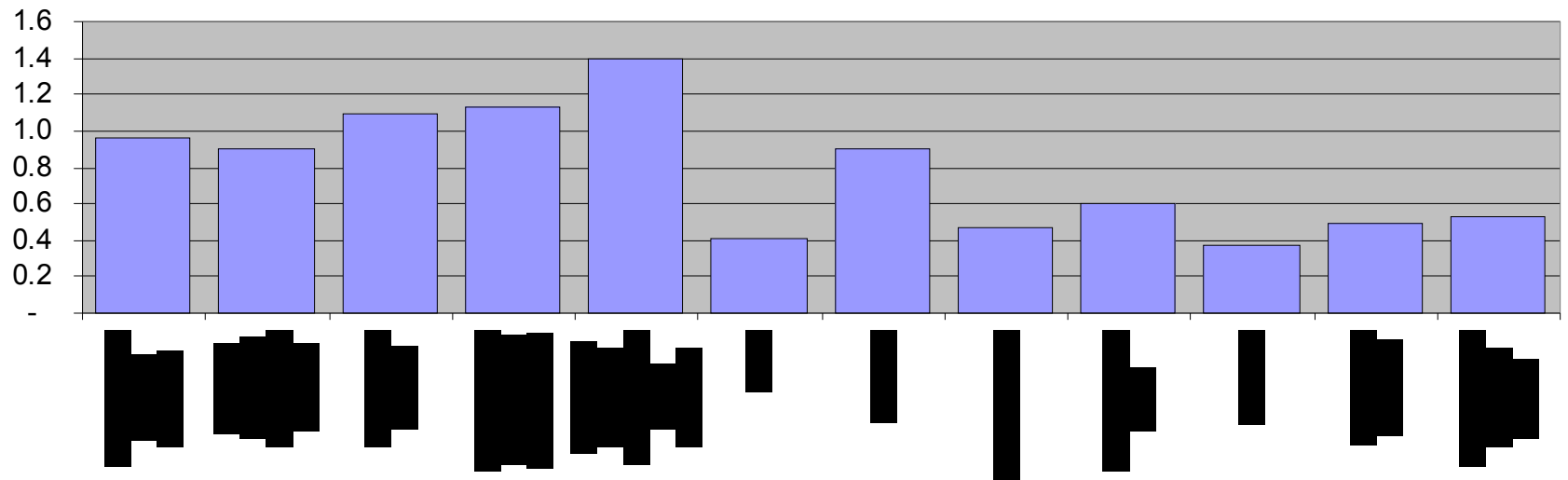
Ecological Footprint (gha) per \$m of spending



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Carbon dioxide/\$ intensities

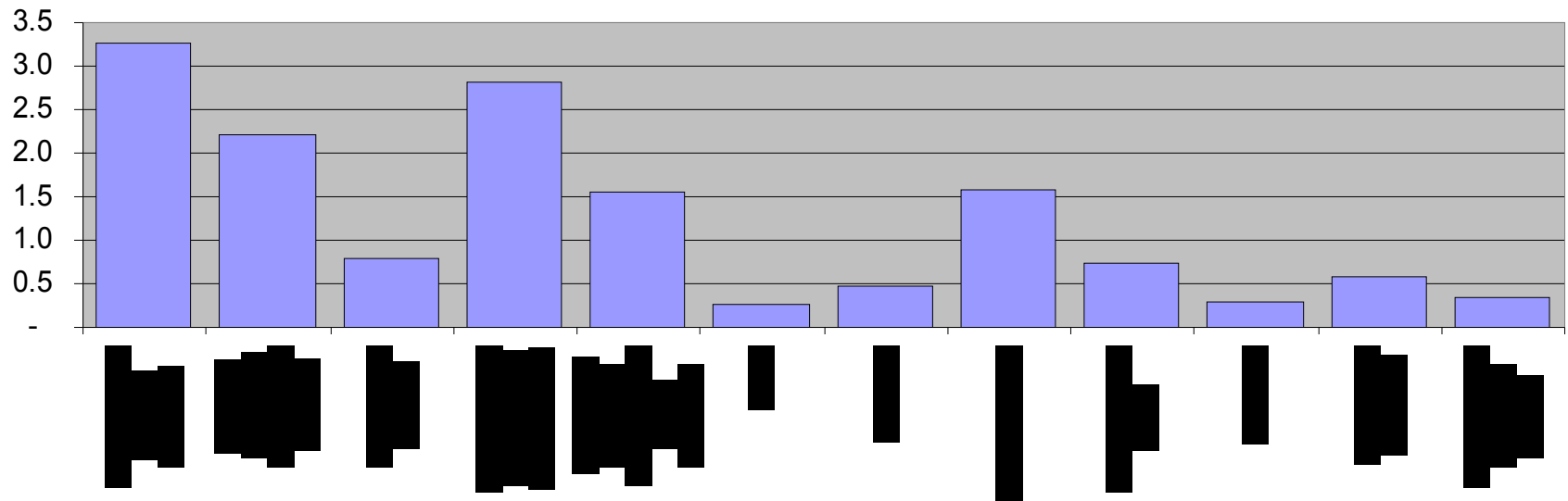
Carbon Dioxide Emissions (kt) per \$m of spending



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Material/\$ intensities

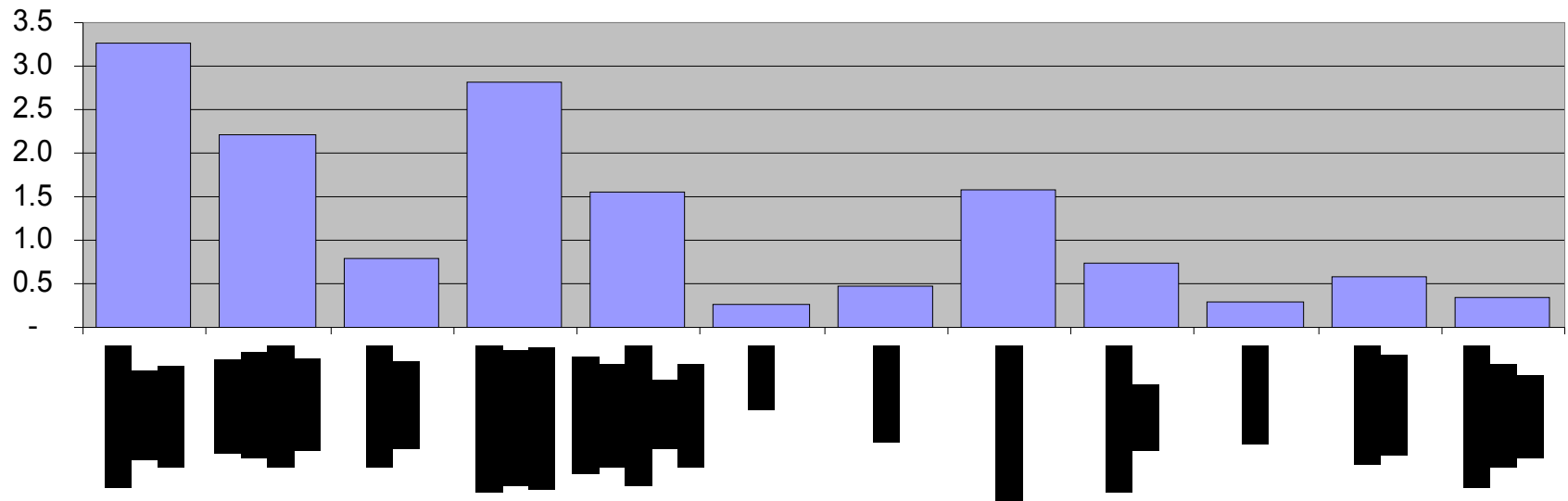
Material consumption (kt) per \$m of spending



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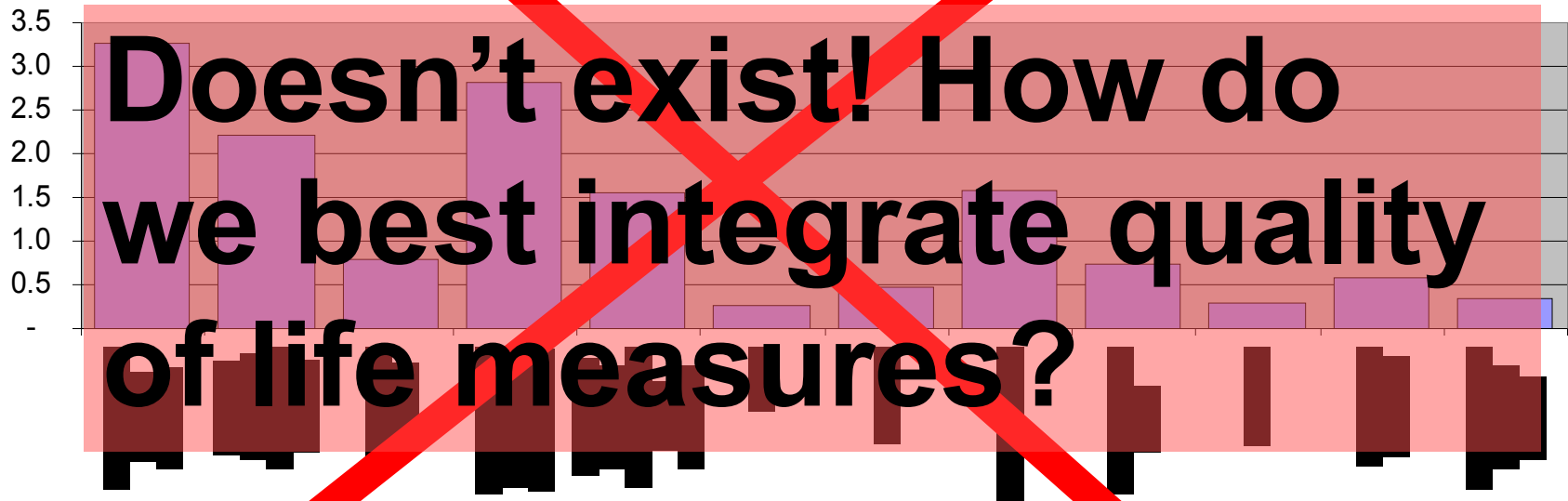
Fun/tonne intensities

Unit of fun (smiles per hour) per tonne of resource use



Fun/tonne intensities

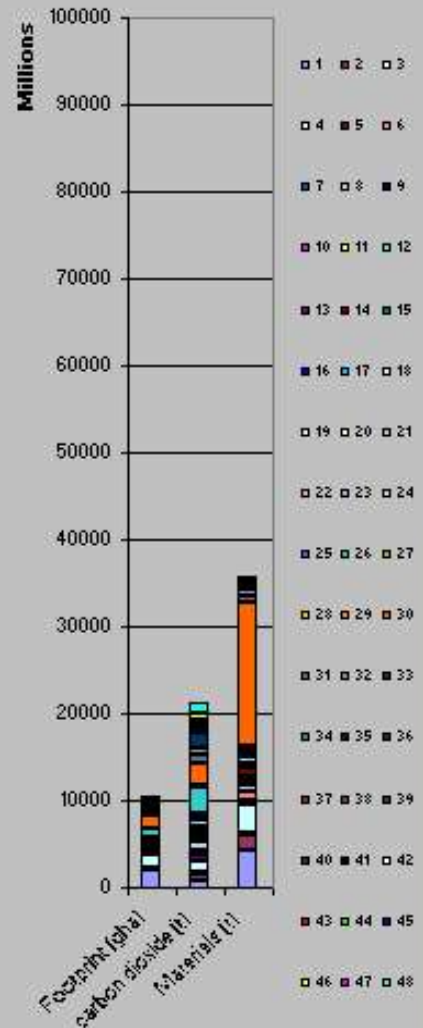
Units of fun (miles per hour) per tonne of resource use



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Modelling production/consumption scenarios

OECD sectors	Supply Efficiencies	Case	MOBILITY supply demand	Global Environmental Impacts
1			100%	100%
2			100%	100%
3			100%	100%
4			100%	100%
5			100%	100%
6			100%	100%
7			100%	100%
8			100%	89%
9			100%	1%
10			100%	100%
11			100%	30%
12			100%	100%
13			100%	51%
14			100%	100%
15			100%	2%
16			100%	0%
17			100%	100%
18			100%	28%
19			100%	100%
20			100%	100%
21			100%	97%
22			100%	45%
23			100%	100%
24			100%	57%
25			100%	100%
26			100%	100%
27			100%	100%
28			100%	100%
29			100%	100%
30			100%	100%
31			100%	86%
32			100%	100%
33			100%	100%
34			100%	100%
35			100%	100%
36			100%	70%
37			100%	100%
38			100%	100%
39			100%	0%
40			100%	66%
41			100%	100%
42			100%	100%
43			100%	13%
44			100%	24%
45			100%	12%
46			100%	100%
47			100%	1%
48			100%	100%



Demand Management - Mobility

Overall Demand: 100%

Scenario 1

Scenario 2

Scenario 3

Scenario 4

Scenario 5

Summary Results

CO2 footprint materials

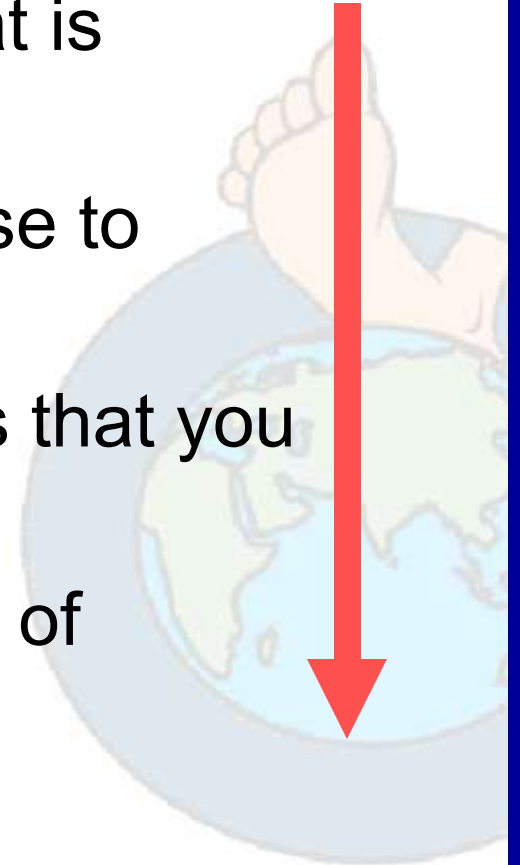
3. Selection of case studies



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Basic Principles

- **Research** – fully understand what is happening now
- **Reduce** – energy and material use to minimum
- **Reclaim** – recover any resources that you can
- **Renewables** – maximise the use of renewable resources



LOW footprint nourishment



Table 1: CO₂ emission sources at Commonwork farm.

Energy Source	tCO ₂ /year
Oil	85.55
Electricity (<i>from green tariff</i>)	1.37 (c. 100 tCO ₂ without green tariff)
Feed	69.74
Vehicles	94.02
LPG	9.59
Total	260.30



Full reports:

<http://www.bestfootforward.com/downloads/ZEF1.pdf>

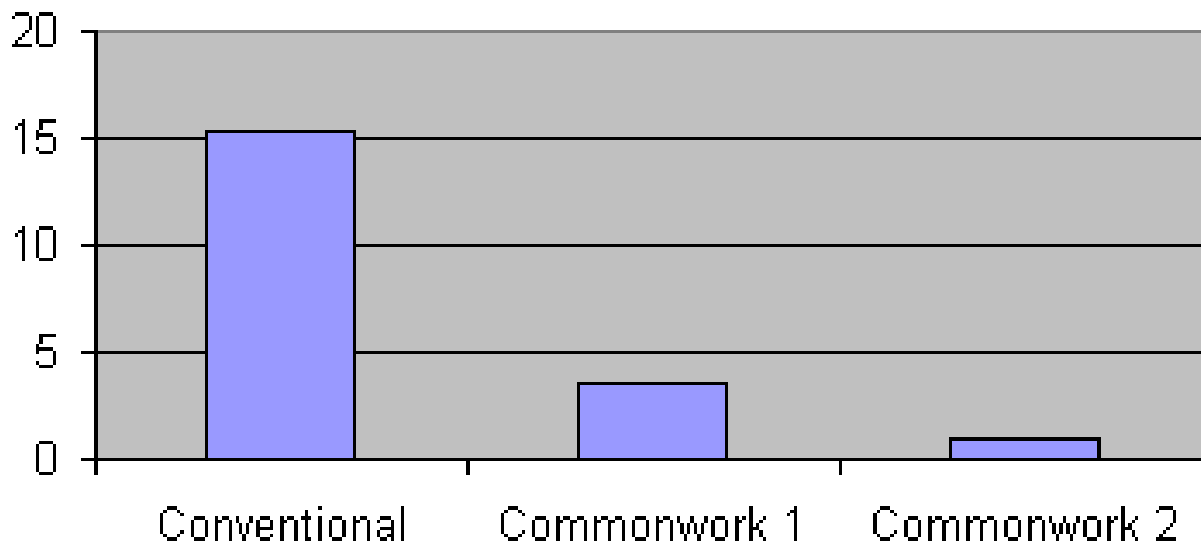
<http://www.bestfootforward.com/downloads/ZEF2.pdf>

Sources: BFF, ZEDFactory



LOW footprint nourishment

Relative CO₂ emissions per litre milk; conventional dairy production, existing (Commonwork 1) and planned (Commonwork 2) measures



93% CO₂
reductions
possible

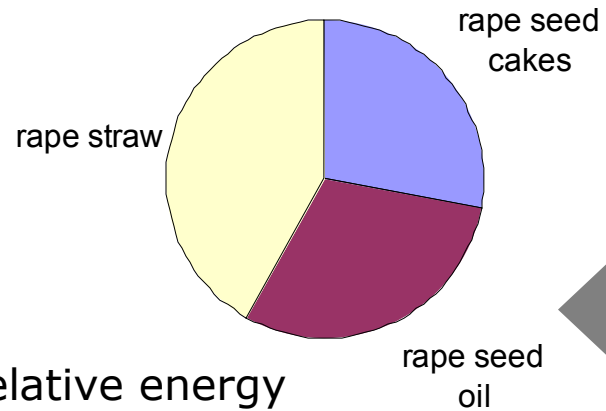
Sources: BFF, ZEDFactory

LOW footprint travel



Table 2: CO₂ emissions from cultivating a hectare of Oilseed Rape

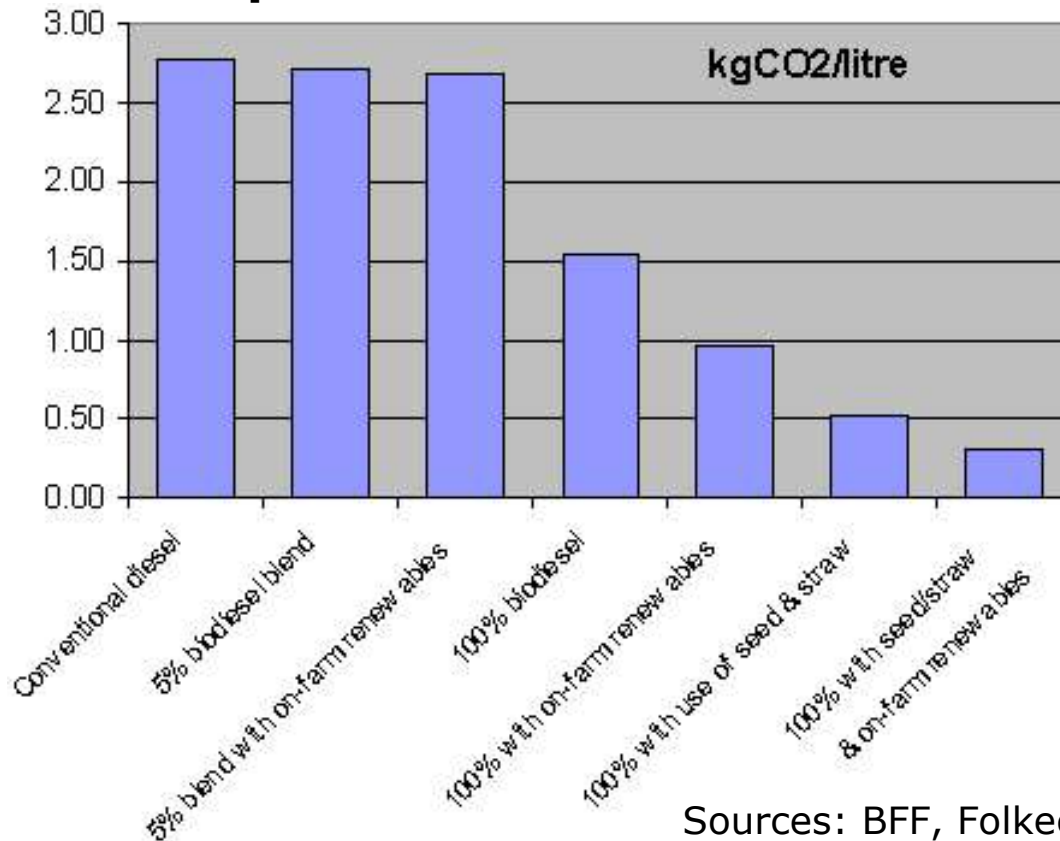
<u>kgCO₂/ha</u>	
1604	Overall emissions
<i>of which</i>	
395	<u>diesel/oil on farm</u>
217	<u>electricity on farm</u>
483	<u>process energy for sowing seed, machinery, fertilizer, and pesticides</u>
509	<u>field and crop</u>



Relative energy content of rape crop

LOW footprint travel

CO₂ emissions per litre fuel; diesel, 5% biodiesel blend, 100% biodiesel plus various options for additional renewables and use of rape straw and seed.



88% CO₂
reduction
possible

Sources: BFF, Folkecenter

But is there enough biodiesel?



Footprint of biodiesel production in UK would far exceed UK land area



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LOW footprint shelter

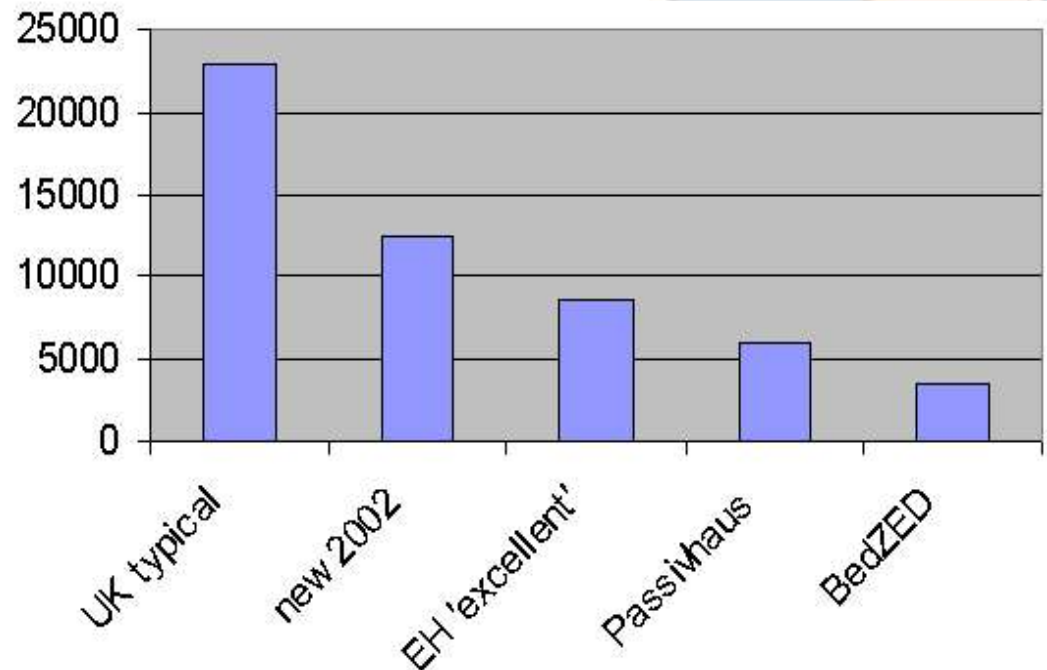


Sources: BFF, ZEDFactory, SEI, Bioregional

Further information:
www.zedstandards.com



Household energy consumption (kWh/household/year)



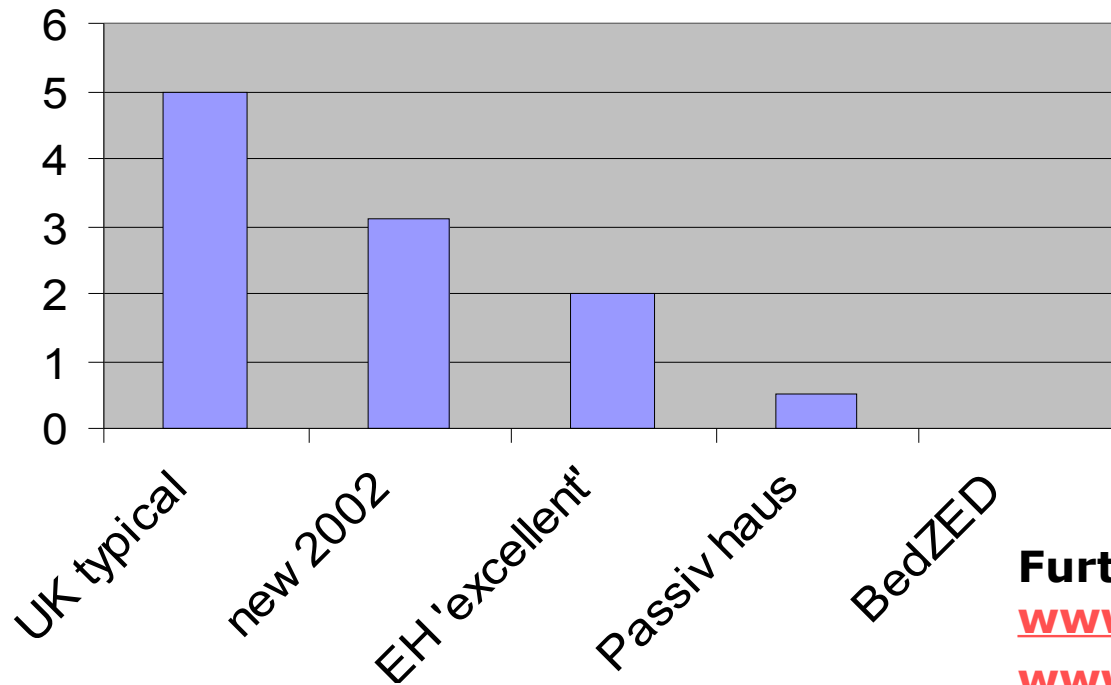
Building to ZEDStandards



© Bda/ZEDfactory

LOW footprint shelter

Household carbon dioxide emissions (tCO₂/household/year)



> 95% CO₂
reductions
possible

Further information:

www.zedstandards.com

www.zedfactory.com



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Thank You



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within the means of nature”*

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