



EUROPEAN FOREST
INSTITUTE

Forests: Interconnecting Sustainable Development Goals to Action
EFI 2018 Scientific Seminar
27 September, Alghero, Sardinia

Making the UN Sustainable Development Goals Work for Sustainable Wellbeing

Papers mentioned in this presentation can be downloaded from: www.robertcostanza.com

Prof. Robert Costanza

VC's Chair in Public Policy

Crawford School of Public Policy

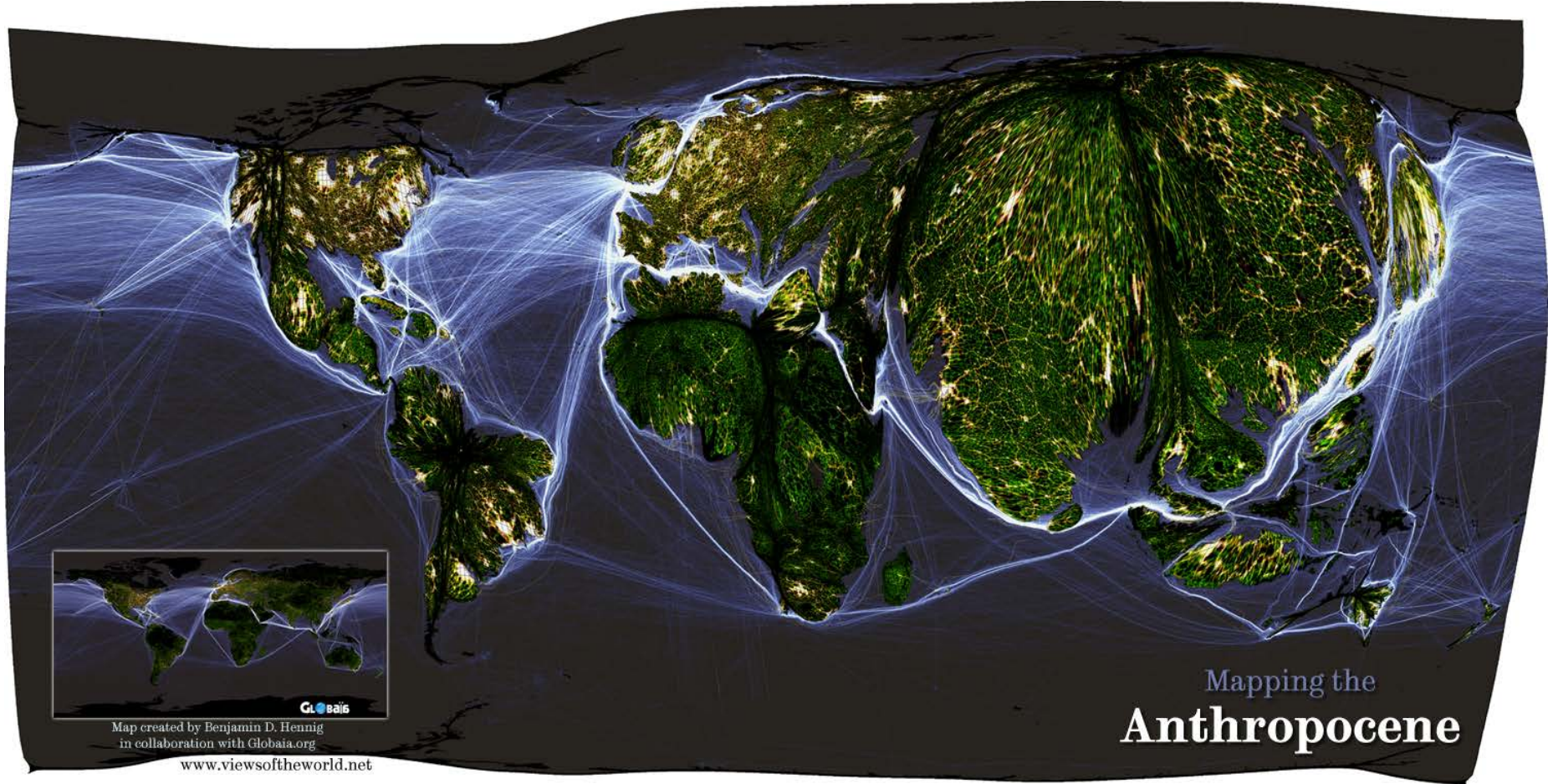
Australian National University

Editor in Chief, *The Anthropocene Review*



**Australian
National
University**

Human influence on the earth system is now so large, that a new geologic epoch (*the Anthropocene*) has begun. We now live in a “Full World”



Map created by Benjamin D. Hennig
in collaboration with Globaia.org

www.viewsoftheworld.net

Mapping the
Anthropocene

Human influence on the earth system is now so large, that a new geologic epoch (*the Anthropocene*) has begun. We now live in a “Full World”

Business as usual is not an option

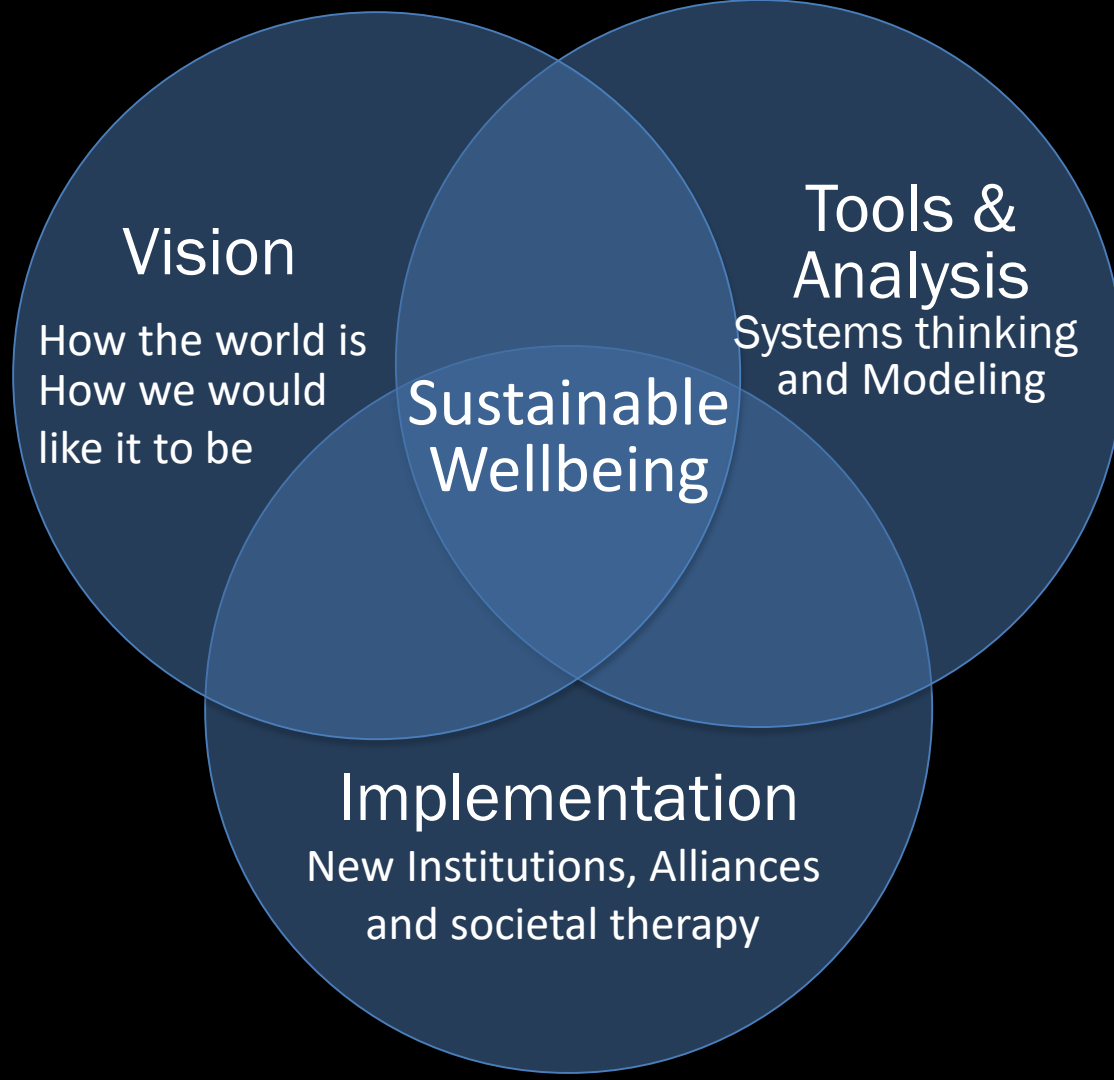
To create a sustainable and desirable Anthropocene, we need to think, act, finance, and govern differently



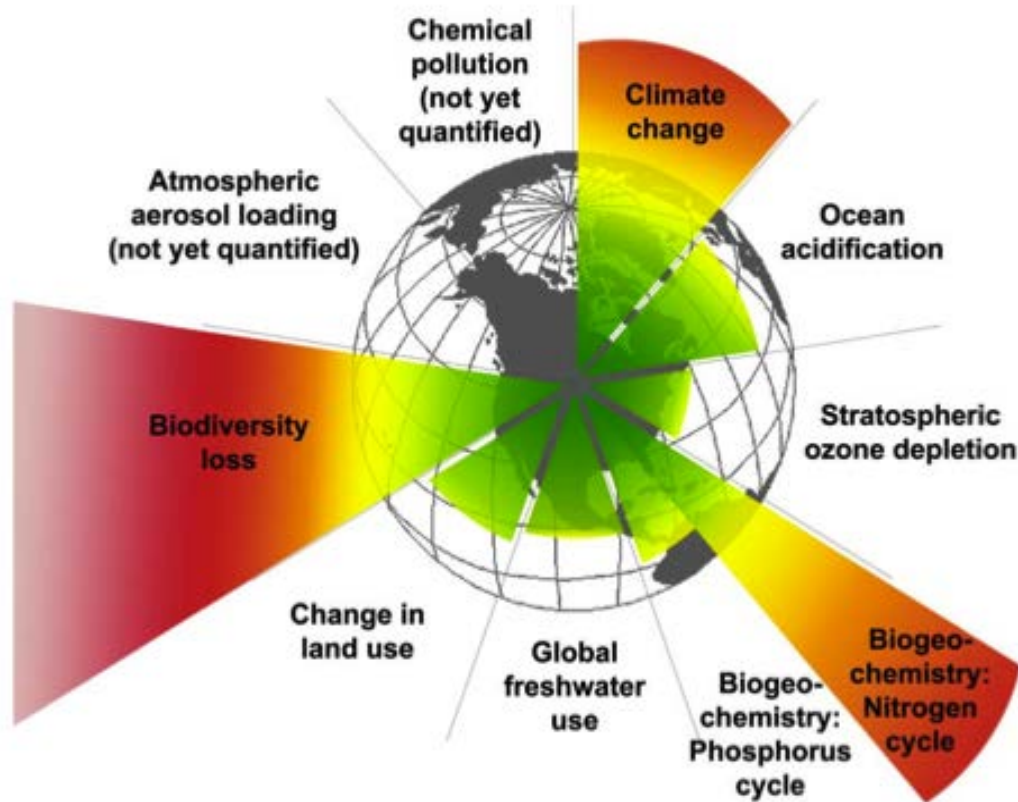
Map created by Benjamin D. Hennig
in collaboration with GloBaia.org

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Mapping the
Anthropocene



PLANETARY BOUNDARIES: **THERE ARE FUNDAMENTAL *ECOLOGICAL* CONSTRAINTS**



Rockström, J., et al. 2009. A safe operating space for humanity. *Nature* 461:472-475

Steffen, W., J. Rockström, and R. Costanza. 2011. **How Defining Planetary Boundaries Can Transform Our Approach to Growth.** *Solutions*. Vol 2, No. 3, May 2011

TRUMLAND:

THEATER
AN INCONVENIENT TRUTH

A REASSURING LIE



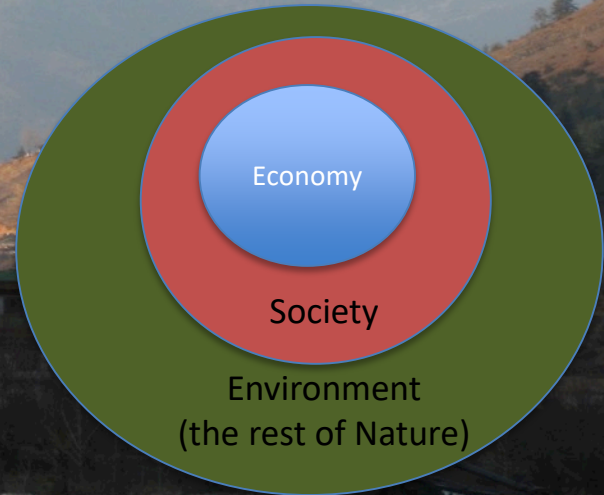
*We need a **third** movie...*



*We need a **third** movie and a new vision and narrative...*

A sustainable and desirable economy-in-society-in-the rest of nature.

A Wellbeing Economy



Overlapping Ideas

Wellbeing Economy
Circular BioEconomy
Ecological Economy
Regenerative Economy
Ecological Civilization
Doughnut Economy
Steady State Economy
Lagom Economy

An Introduction to
Ecological Economics Second Edition

Integrated Questions/Goals:

- Ecologically Sustainable Scale
- Socially Fair Distribution
- Economically Efficient Allocation

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An Introduction to Ecological Economics Second Edition

Costanza | Cumberland | Daly | Goodland
Norgaard | Kubiszewski | Franco

Second Edition

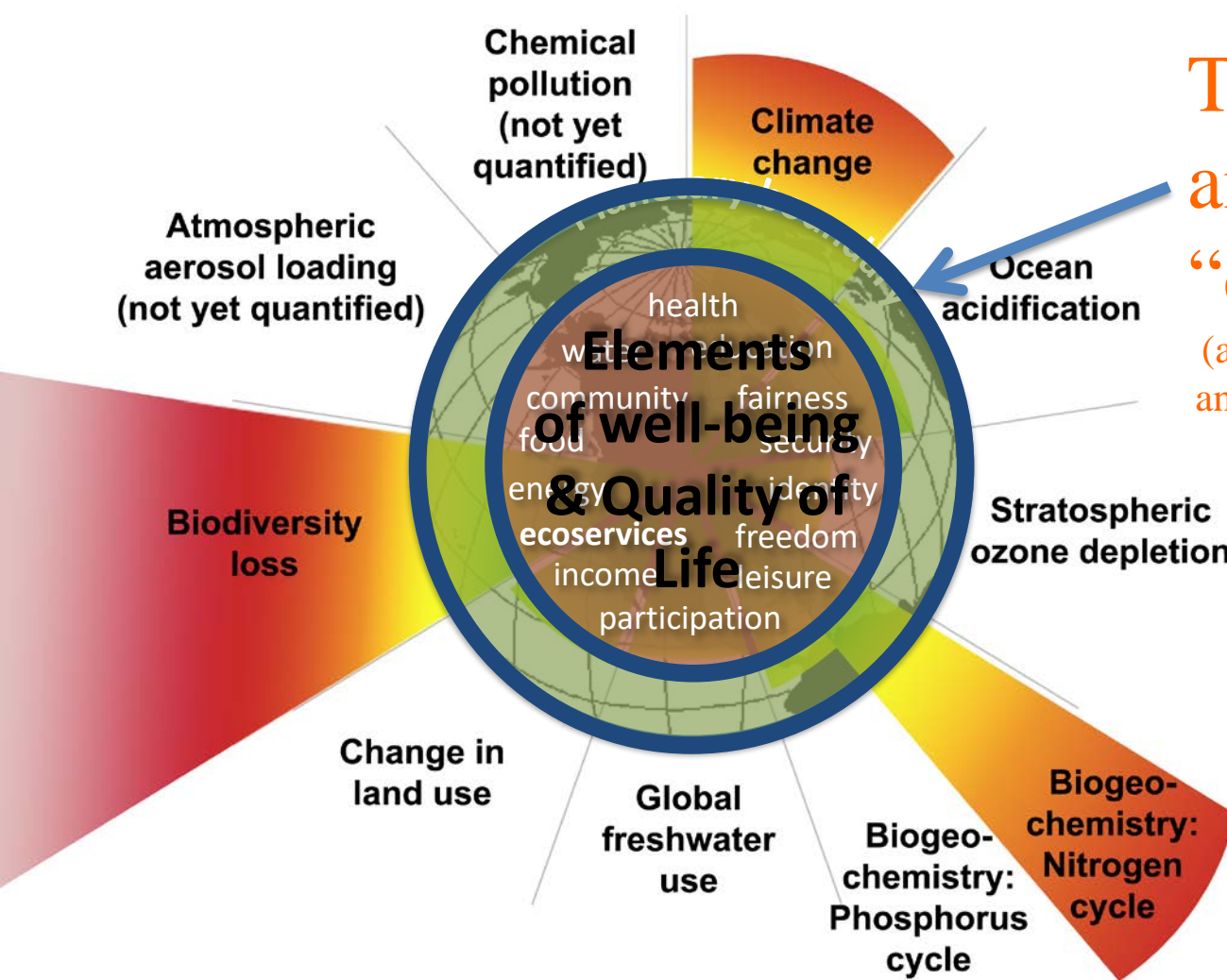
An Introduction to **Ecological Economics**

Robert Costanza
John H. Cumberland
Herman Daly
Robert Goodland
Richard B. Norgaard
Ida Kubiszewski
Carol Franco

 **CRC Press**
Taylor & Francis Group

The Sustainable and Desirable “doughnut”

(after: K. Raworth. 2012. A safe and just space for humanity: can we live within the doughnut? Oxfam International)



UN Sustainable Development Goals (SDGs)

TRANSFORMING OUR WORLD: THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT





ELSEVIER

Contents lists available at ScienceDirect

Ecological Economics

journal homepage: www.elsevier.com/locate/ecolecon



Modelling and measuring sustainable wellbeing in connection with the UN Sustainable Development Goals



Robert Costanza^{a,*}, Lew Daly^b, Lorenzo Fioramonti^c, Enrico Giovannini^d, Ida Kubiszewski^a,
Lars Fogh Mortensen^e, Kate E. Pickett^f, Kristin Vala Ragnarsdottir^g, Roberto De Vogli^h, Richard Wilkinsonⁱ

^a Crawford School of Public Policy, Australian National University, Australia

^b Demos, New York, NY, USA

^c Centre for the Study of Governance Innovation, University of Pretoria, South Africa

^d Department of Economics and Finance, University of Rome Tor Vergata, Italy

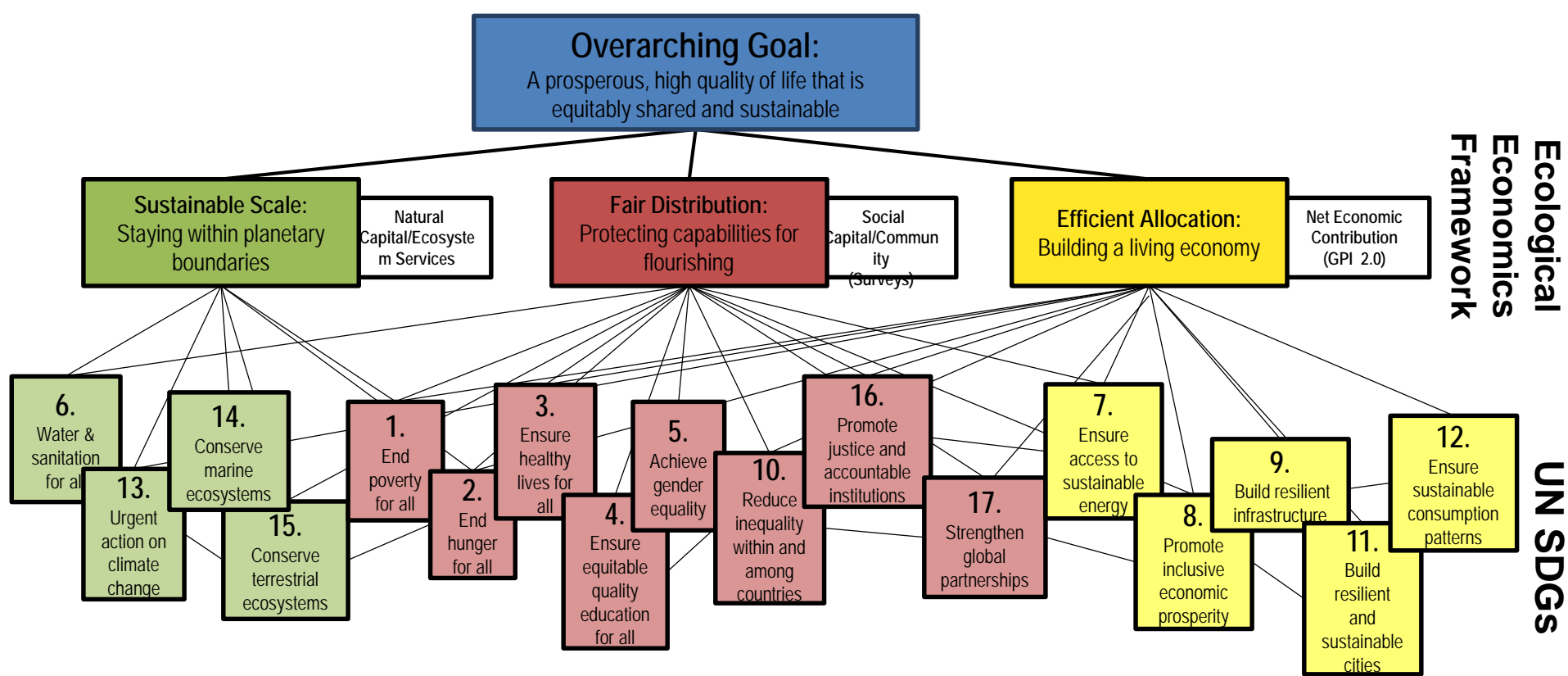
^e European Environmental Agency, Copenhagen, DK, Denmark

^f Department of Health Sciences, University of York, UK

^g Faculty of Earth Sciences, University of Iceland, Reykjavik, Iceland

^h Department of Public Health Sciences, University of California, Davis, USA

ⁱ Division of Epidemiology and Public Health, University of Nottingham, UK



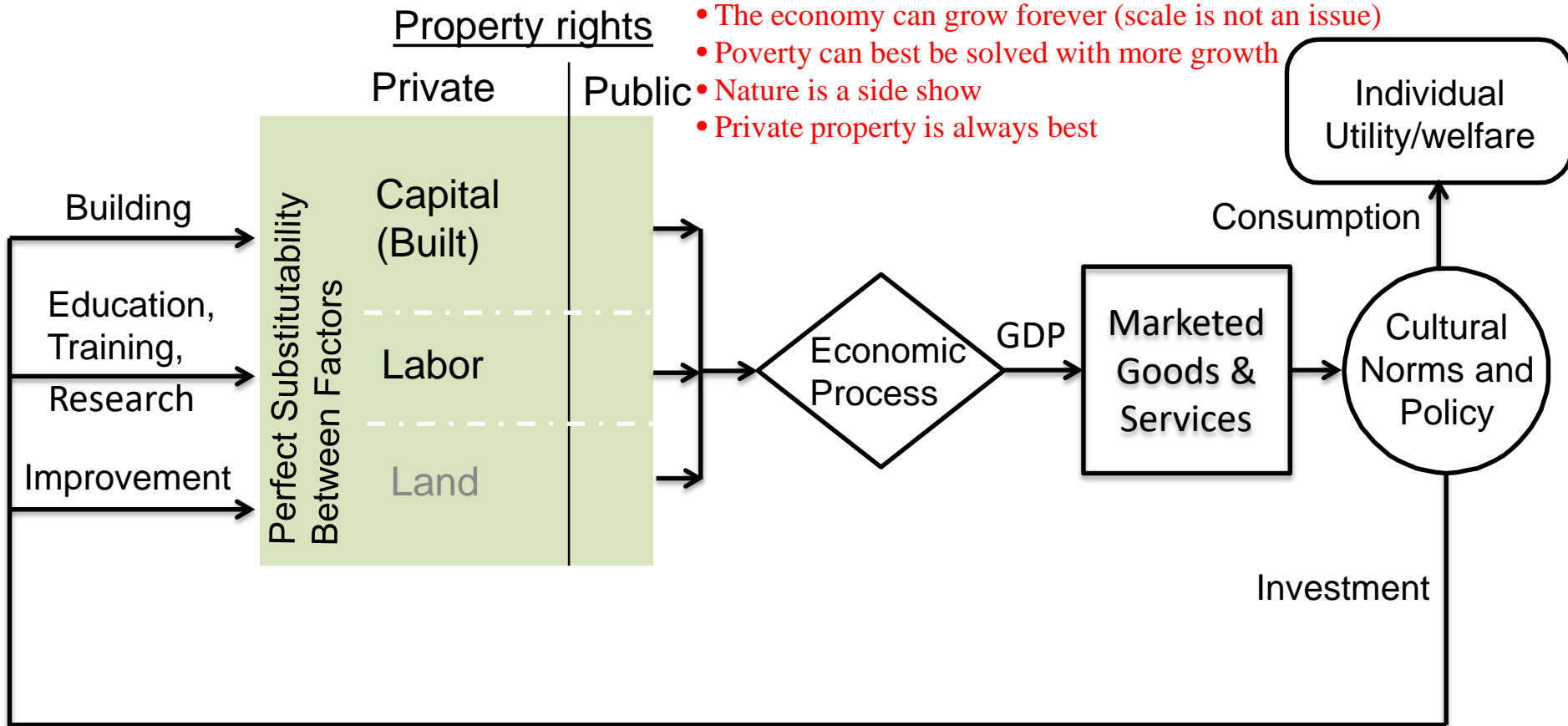
167 Targets, 300+ Indicators

Figure 2. The relationship of the 17 UN Sustainable Development Goals (SDGs) to the framework of ecological economics and the overarching goal of a sustainable, equitable and prosperous system (Costanza et al. 2016. Modelling and measuring sustainable wellbeing in connection with the UN Sustainable Development Goals. *Ecological Economics*. 130:350–355.

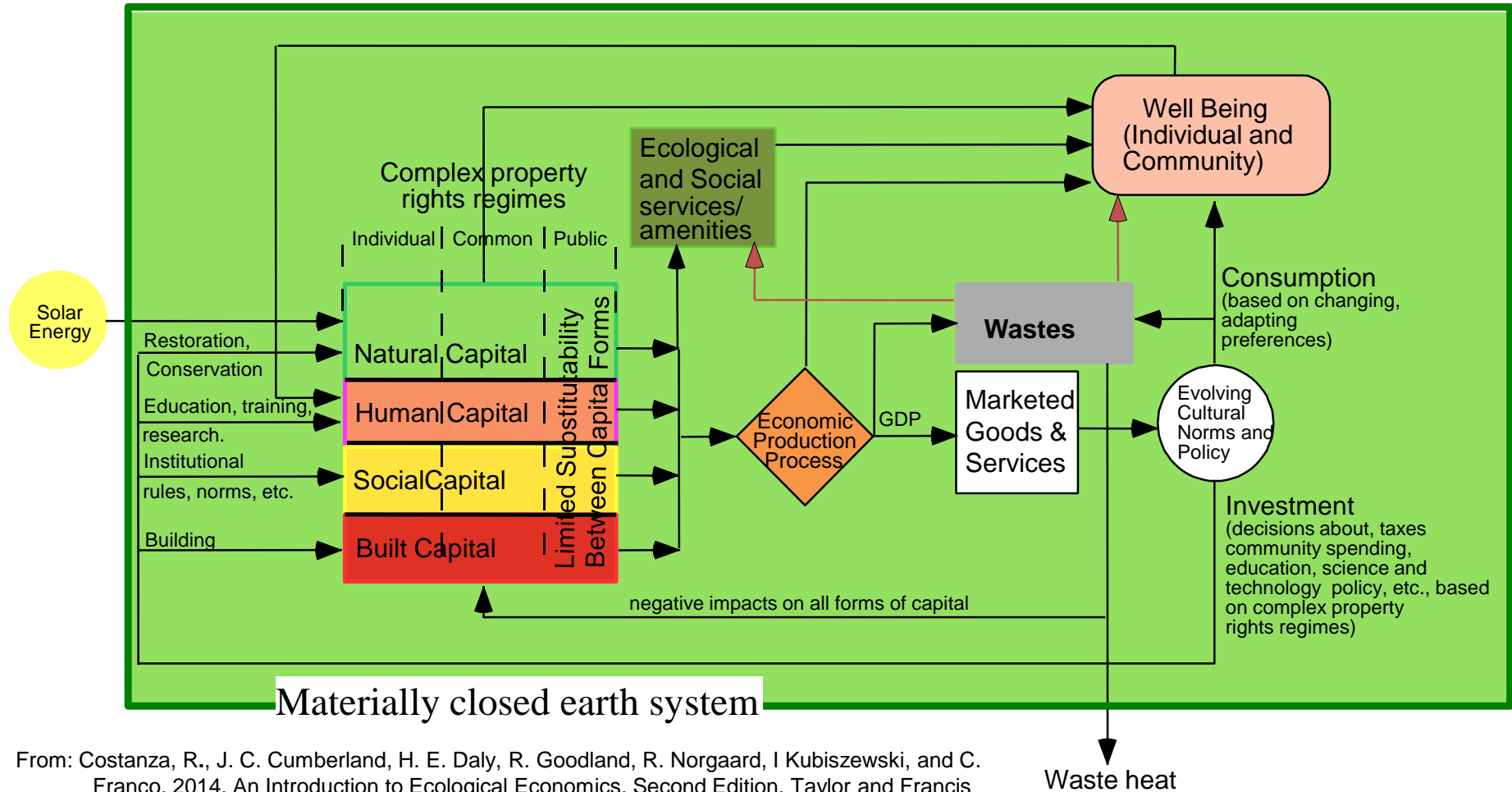
“Empty World” Vision of the Economy

Basic premises:

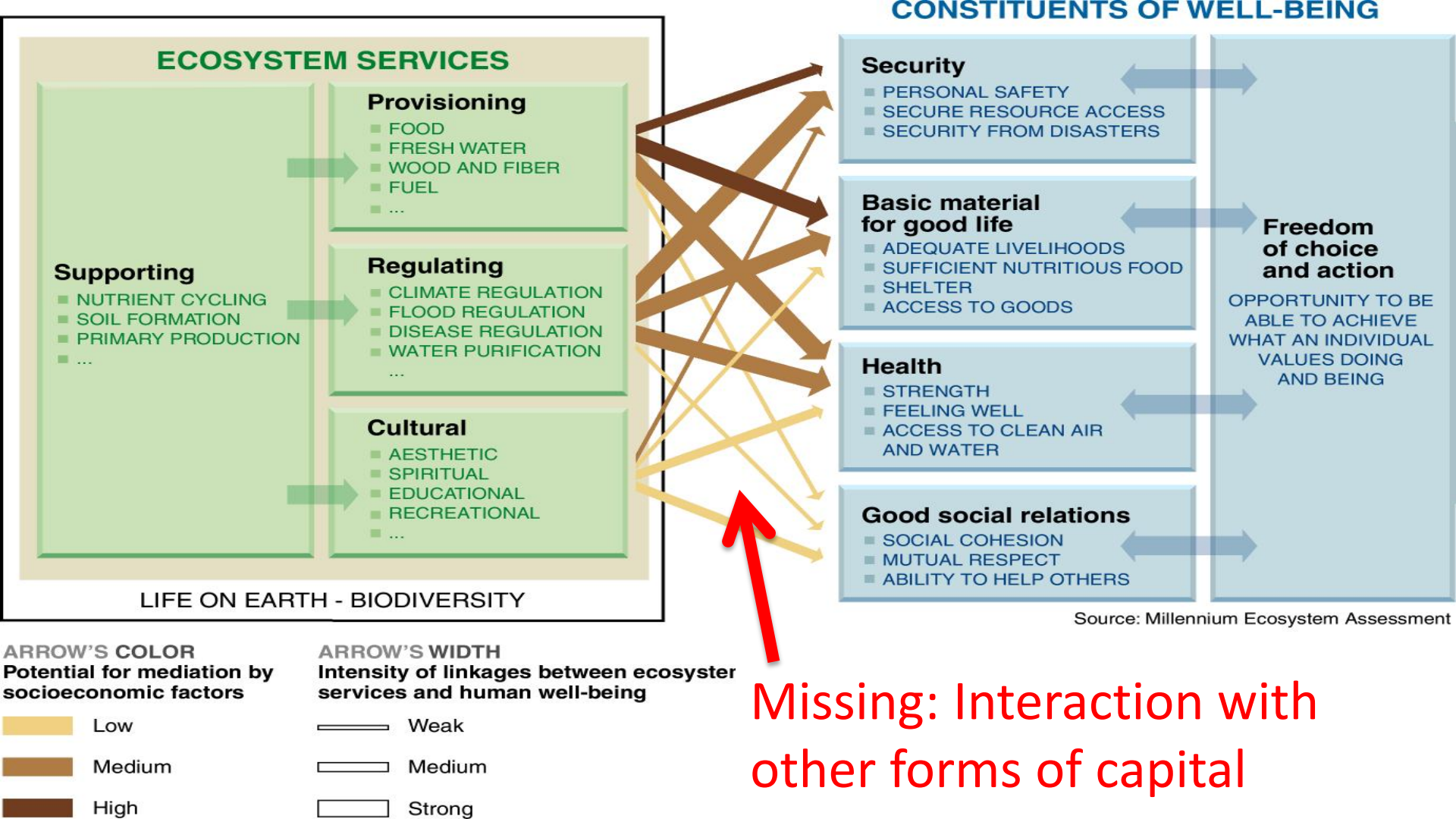
- More is always better – GDP is a good proxy for welfare
- The economy can grow forever (scale is not an issue)
- Poverty can best be solved with more growth
- Nature is a side show
- Private property is always best



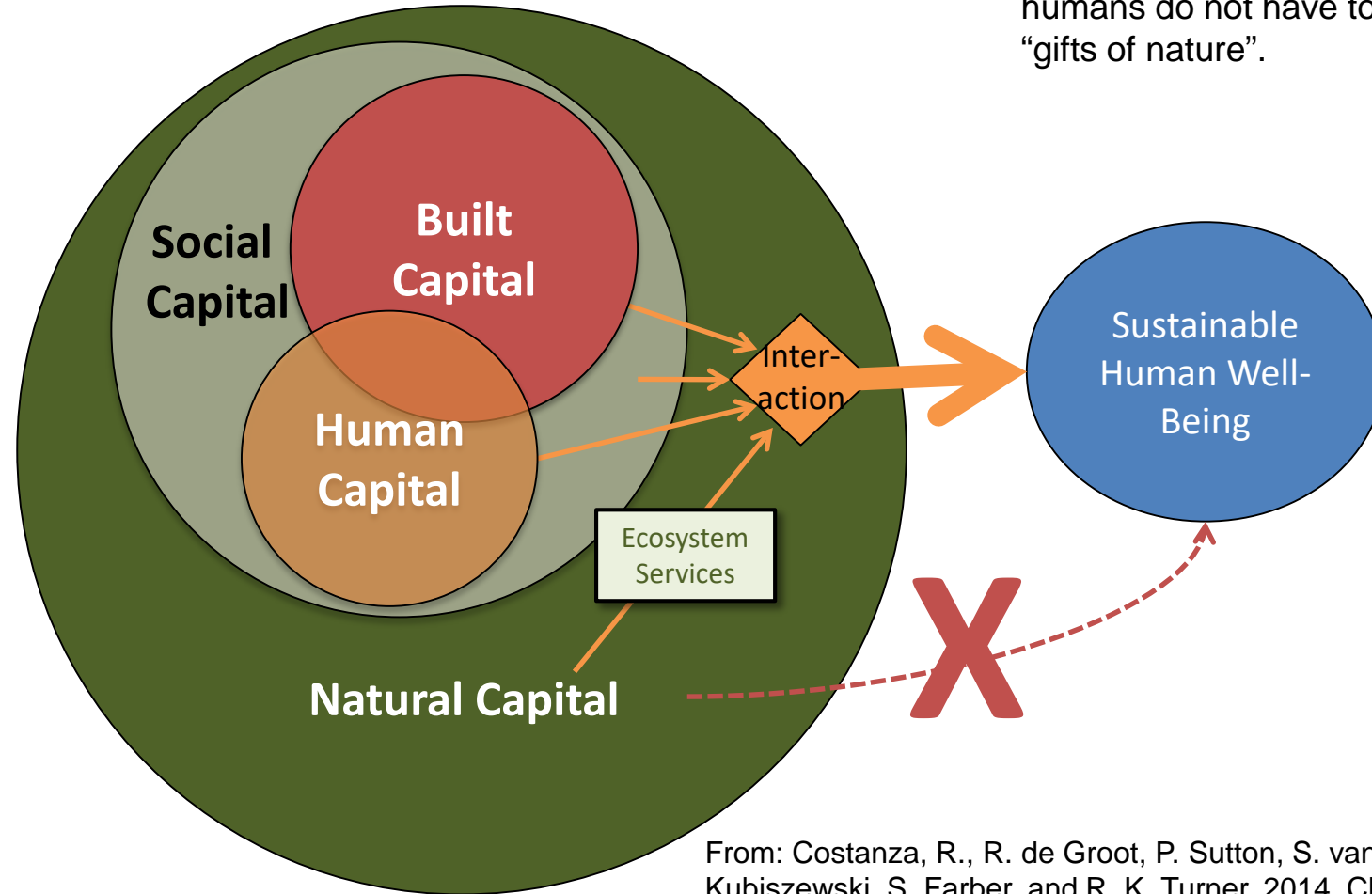
“Full World” Vision of the Whole System



From: Costanza, R., J. C. Cumberland, H. E. Daly, R. Goodland, R. Norgaard, I Kubiszewski, and C. Franco. 2014. An Introduction to Ecological Economics, Second Edition. Taylor and Francis

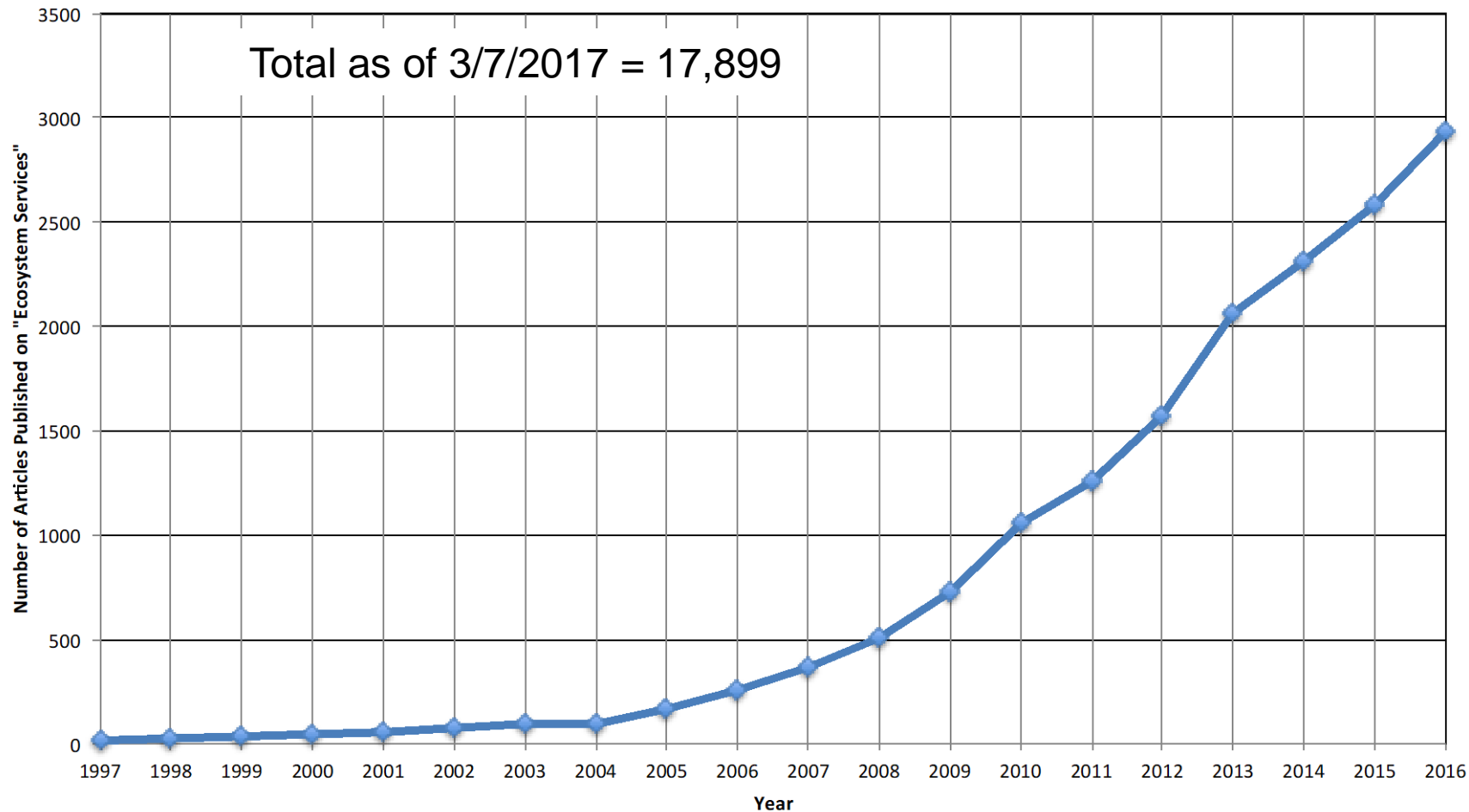


Natural Capital is everything in the world that humans do not have to produce or maintain – the “gifts of nature”.



From: Costanza, R., R. de Groot, P. Sutton, S. van der Ploeg, S. Anderson, I. Kubiszewski, S. Farber, and R. K. Turner. 2014. Changes in the global value of ecosystem services. *Global Environmental Change* 26:152-158.

Number of Articles Published on "Ecosystem Services" in SCOPUS



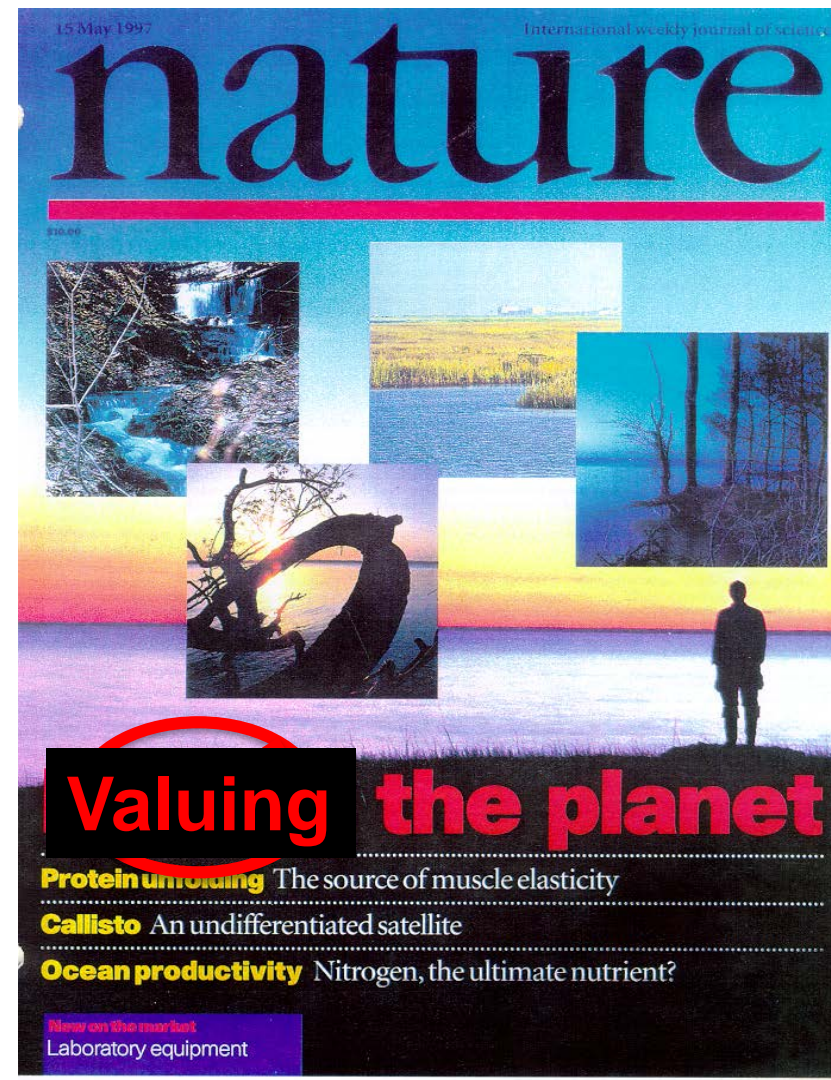
NATURE VOL 387 15 MAY 1997

The value of the world's ecosystem services and natural capital

Robert Costanza, Ralph d' Arge, Rudolf de Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O' Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton & Marjan van den Belt

For the entire biosphere, the value (most of which is outside the market) is estimated to be in the range of US\$16–54 trillion per year, with an average of US\$33 trillion per year.

2nd most cited article in the Ecology/Environment area according to the ISI Web of Science with >8,500 citations (> 21,000 in Google Scholar) which puts it in the top 0.01% of all papers ever published.





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CrossMark

Changes in the global value of ecosystem services

Robert Costanza^{a,*}, Rudolf de Groot^b, Paul Sutton^{c,d}, Sander van der Ploeg^b,
Sharolyn J. Anderson^d, Ida Kubiszewski^a, Stephen Farber^e, R. Kerry Turner^f

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Contents lists available at ScienceDirect



...we estimated the loss of

ecosystem services from 1997 to
2011 due to land use change at
\$4.3–20.2 trillion/yr.

Changes in the global value of ecosystem services

Robert Costanza^a, Rudolf W. May^b, Daniel S. Rothman^c, Sharolyn J. Anderson^d, Ida Kubiszewski^a, Stephen Farber^e, R. Kerry Turner^f

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^e University of Pittsburgh, United States

^f University of East Anglia, Norwich, UK

Table 3. Changes in area, unit values and aggregate global flow values from 1997 to 2011 (green are values that have increased, red are values that have decreased)

From: Costanza et al. 2014. Changes in the global value of ecosystem services. <i>Global Environmental Change</i> 26:152-158							B. Change unit values only		C. Change area only		D. Change both unit values and area		E. Column C - Column A		F. Column D - Column B	
							A. Original		Assuming 1997 area and 1997 unit values		Assuming 2011 area and 1997 unit values		Assuming 2011 area and 2011 unit values		2011-1997	
Biome	Area			Unit values			Aggregate Global Flow Value				Change in Value					
	(e6 ha)		Change	2007\$/ha/yr		Change	e12 2007\$/yr				e12 2007\$/yr					
	1997	2011	2011-1997	1997	2011	2011-1997	1997	2011	2011	2011	1997 unit values	2011 unit values				
Marine	36,302	36,302	0	796	1,368	572	28.9	60.5	29.5	49.7	0.6	(10.9)				
Open Ocean	33,200	33,200	0	348	660	312	11.6	21.9	11.6	21.9	-	-				
Coastal	3,102	3,102	0	5,592	8,944	3,352	17.3	38.6	18.0	27.7	0.6	(10.9)				
Estuaries	180	180	0	31,509	28,916	-2,593	5.7	5.2	5.7	5.2	-	-				
Seagrass/Algae Beds	200	234	34	26,226	28,916	2,690	5.2	5.8	6.1	6.8	0.9	1.0				
Coral Reefs	62	28	-34	8,384	352,249	343,865	0.5	21.7	0.2	9.9	(0.3)	(11.9)				
Shelf	2,660	2,660	0	2,222	2,222	0	5.9	5.9	5.9	5.9	-	-				
Terrestrial	15,323	15,323	0	1,109	4,901	3,792	17.0	84.5	12.1	75.1	(4.9)	(9.4)				
Forest	4,855	4,261	-594	1,338	3,800	2,462	6.5	19.5	4.7	16.2	(1.8)	(3.3)				
Tropical	1,900	1,258	-642	2,769	5,382	2,613	5.3	10.2	3.5	6.8	(1.8)	(3.5)				
Temperate/Boreal	2,955	3,003	48	417	3,137	2,720	1.2	9.3	1.3	9.4	0.0	0.2				
Grass/Rangelands	3,898	4,418	520	321	4,166	3,845	1.2	16.2	1.4	18.4	0.2	2.2				
Wetlands	330	188	-142	20,404	140,174	119,770	6.7	36.2	3.4	26.4	(3.3)	(9.9)				
Tidal Marsh/Mangroves	165	128	-37	13,786	193,843	180,057	2.3	32.0	1.8	24.8	(0.5)	(7.2)				
Swamps/Floodplains	165	60	-105	27,021	25,681	-1,340	4.5	4.2	1.6	1.5	(2.8)	(2.7)				
Lakes/Rivers	200	200	0	11,727	12,512	785	2.3	2.5	2.3	2.5	-	-				
Desert	1,925	2,159	234	-	-	0	-	-	-	-	-	-				
Tundra	743	433	-310	-	-	0	-	-	-	-	-	-				
Ice/Rock	1,640	1,640	0	-	-	0	-	-	-	-	-	-				
Cropland	1,400	1,672	272	126	5,567	5,441	0.2	7.8	0.2	9.3	0.0	1.5				
Urban	332	352	20	-	6,661	6,661	-	2.2	-	2.3	-	0.1				
Total	51,625	51,625	0				45.9	145.0	41.6	124.8	(4.3)	(20.2)				

Focus on GDP growth

Market Forces

The market knows best
Inequality not addressed

Policy Reform

Need planning and government
Equity maintained

Individualism

Community

Fortress World

Everyone for themselves
Limited Governance

Great Transition



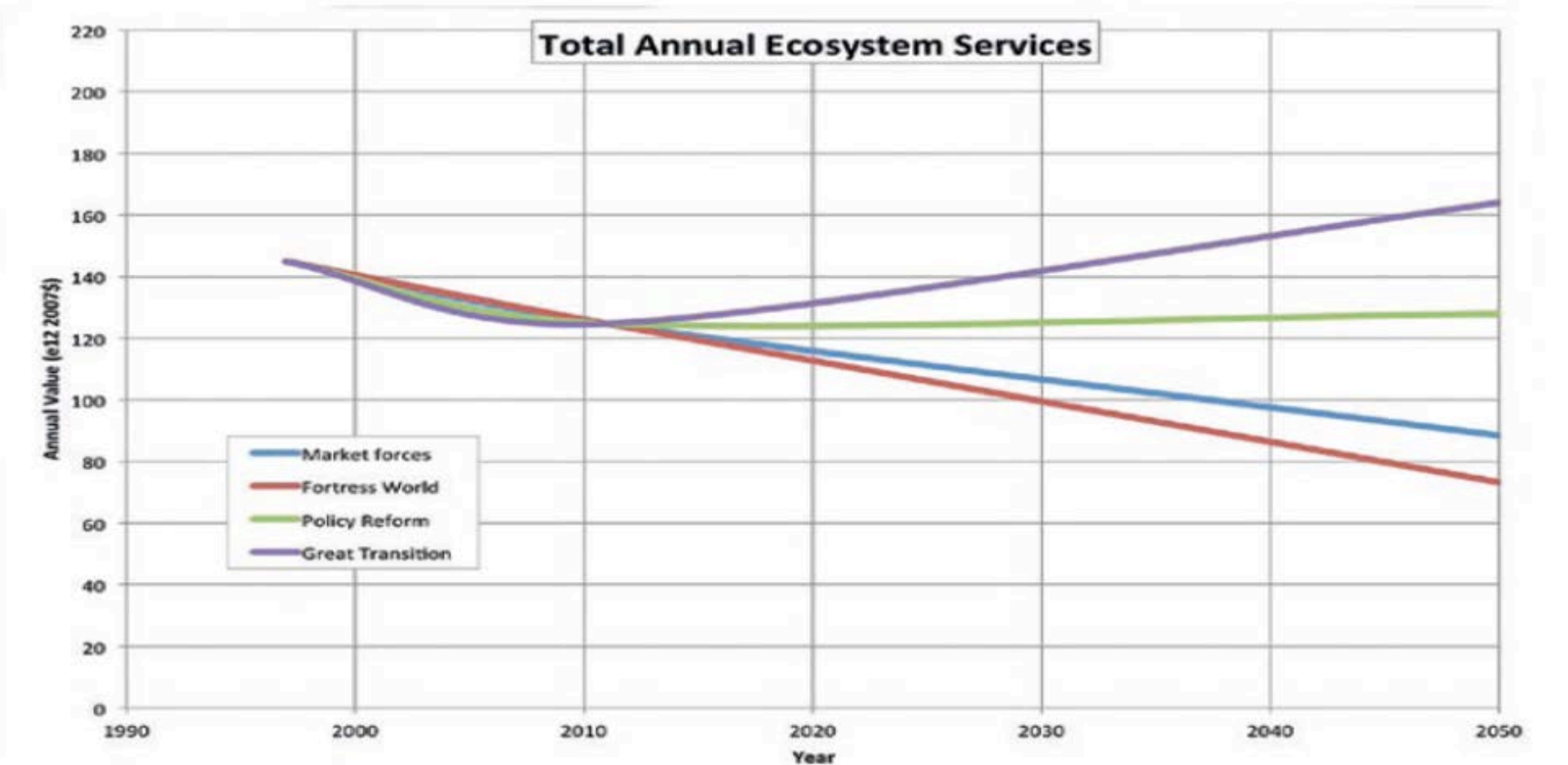
Focus on Well-being

Individualism

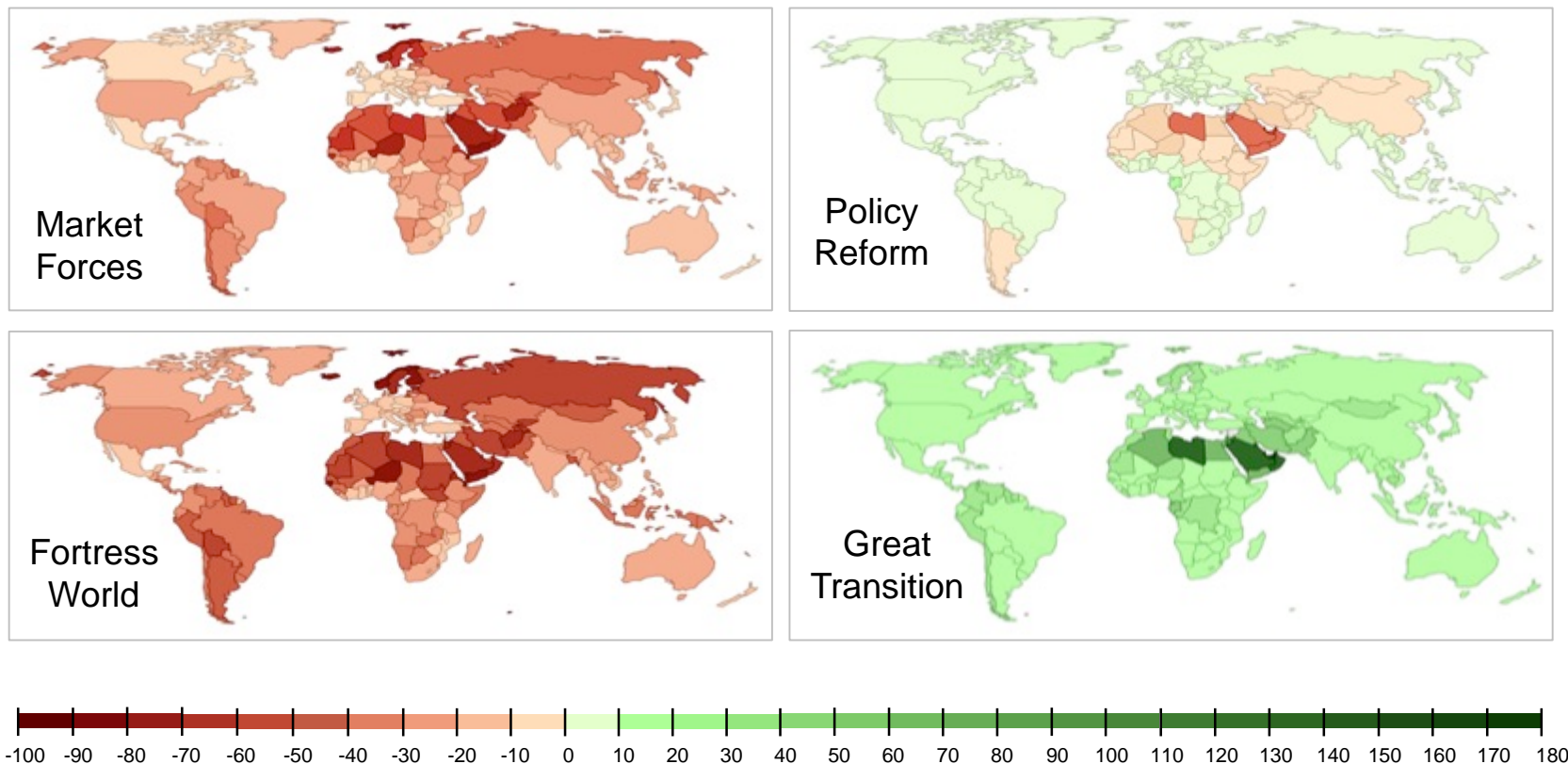


Community

Global total annual flow of ecosystem service values

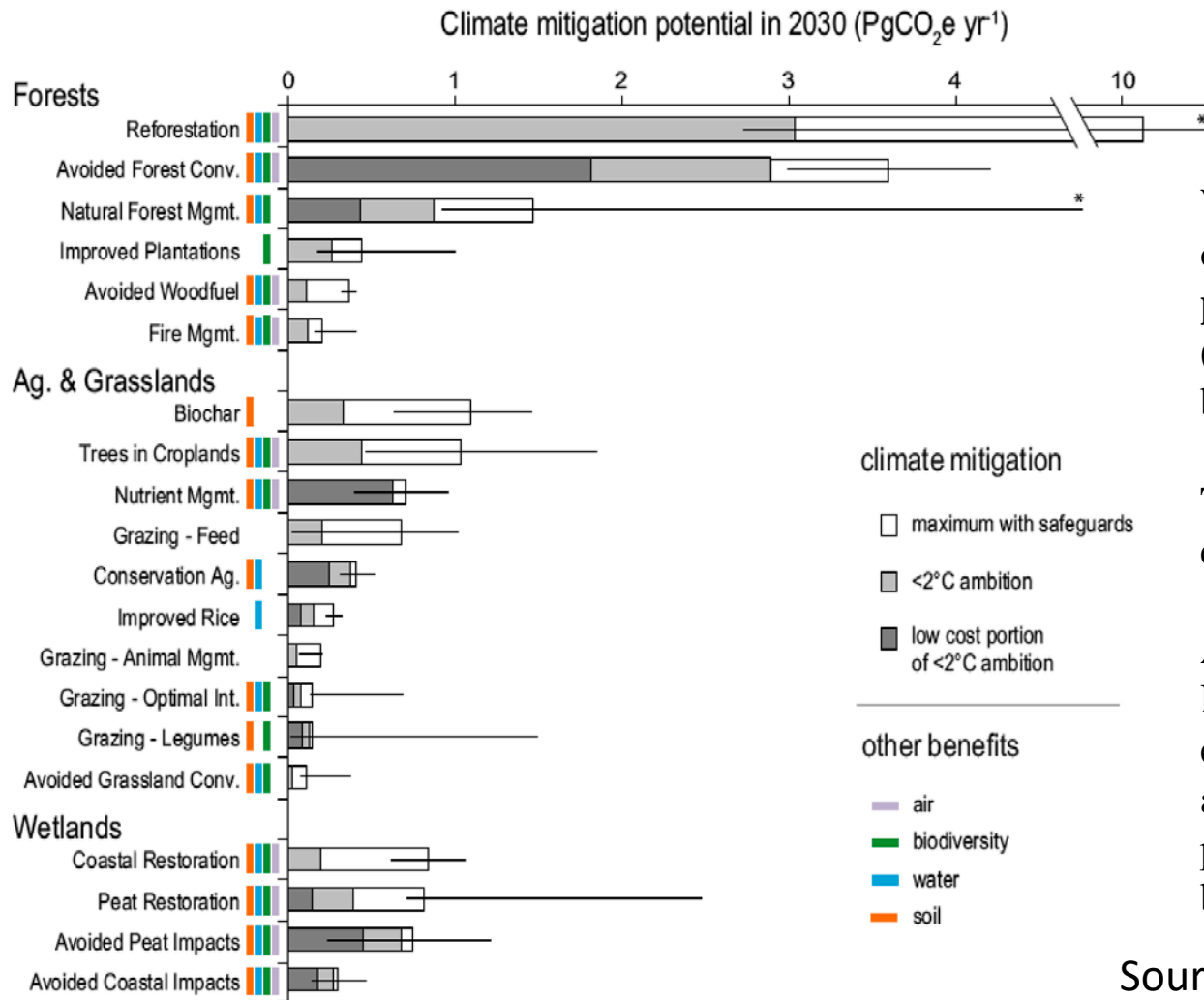


From: Kubiszewski, Costanza, Anderson, and Sutton. (2017). The Future of Ecosystem Services: Global Scenarios and National Implications. *Ecosystem Services*. 26:289-301.



Percent Change in 2050 from 2011 Ecosystem Service Values

From: Kubiszewski, Costanza, Anderson, and Sutton. (2017). The Future of Ecosystem Services: Global Scenarios and National Implications. *Ecosystem Services*. 26:289-301.



We find that the maximum potential of Natural Climate Solutions is **23.8 petagrams of CO₂ equivalent (PgCO₂e) y⁻¹ (95%CI 20.3–37.4)** by 2030

This is $\geq 30\%$ higher than prior estimates,

About half of this maximum (11.3 PgCO₂e y⁻¹) represents cost-effective climate mitigation, assuming the social cost of CO₂ pollution is ≥ 100 USD MgCO₂e⁻¹ by 2030.

Source: Griscom et al. PNAS (2017)



“The welfare of a nation can scarcely be inferred from a measurement of national income as defined by GDP...Goals for ‘more’ growth should specify of what and for what.”

Simon Kuznets

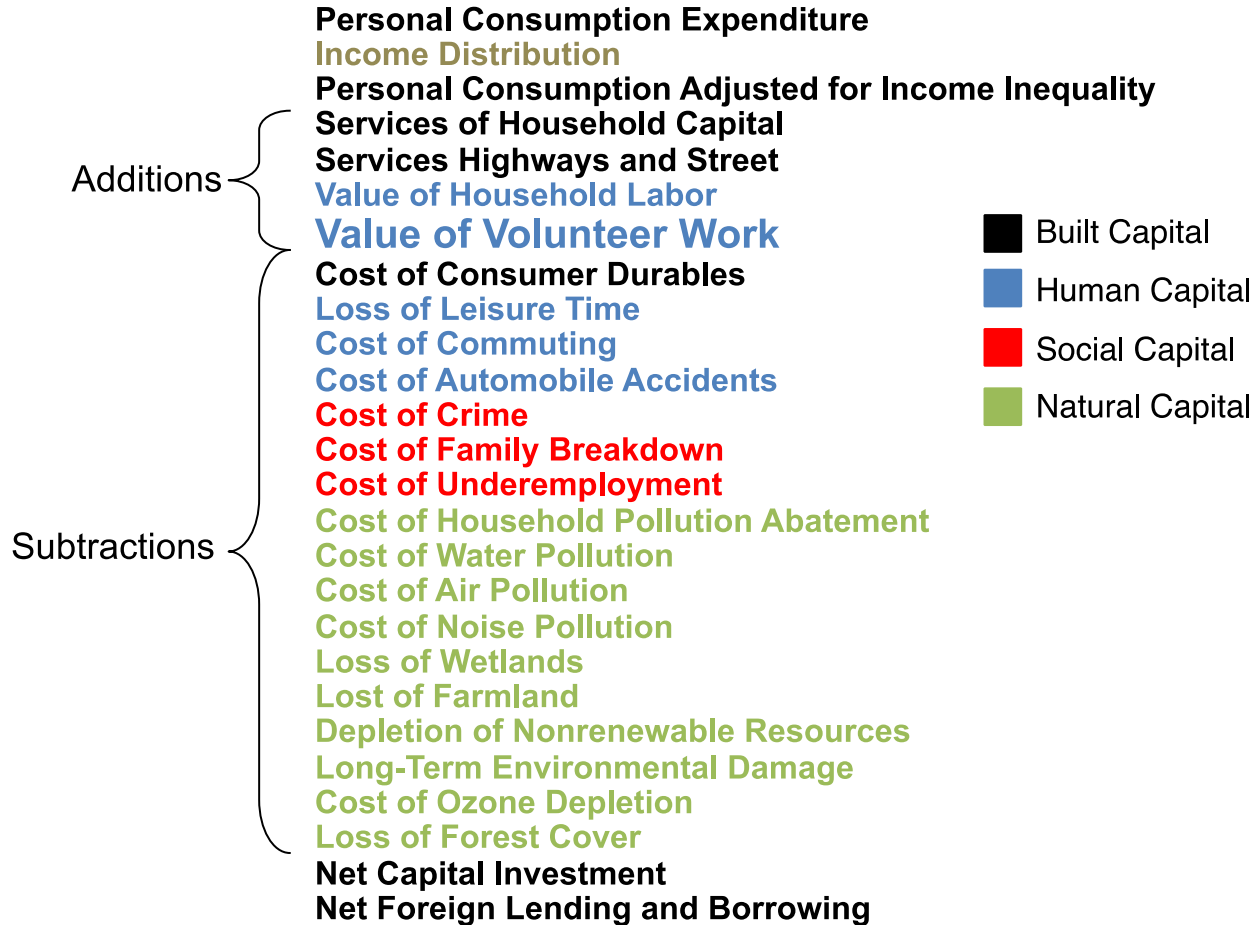


Time to leave GDP behind

Gross domestic product is a misleading measure of national success. Countries should act now to embrace new metrics, urge **Robert Costanza** and colleagues.

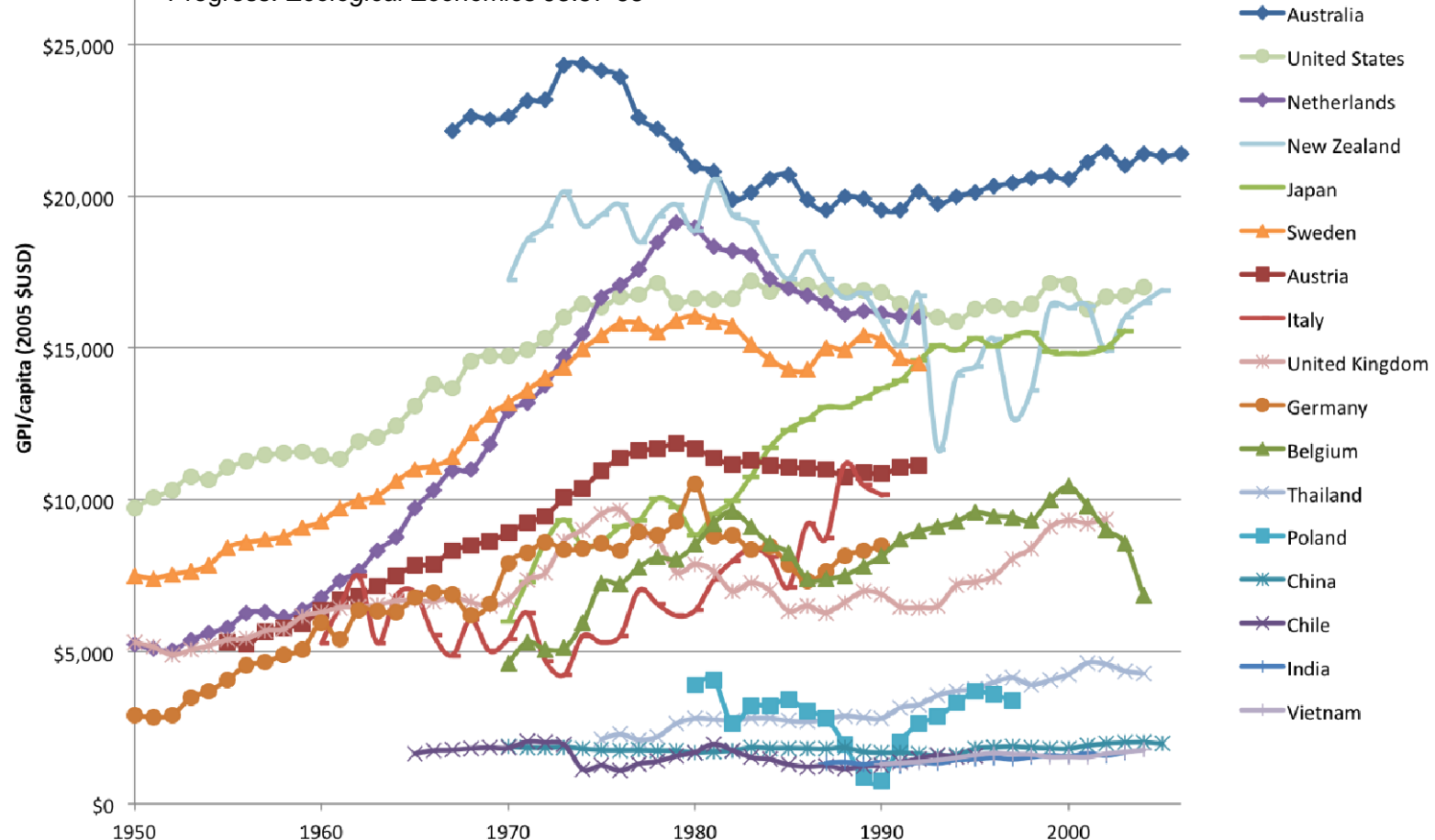
Indicator	Units	Indicators	Explanation	Area coverage	Time
Genuine Progress Indicator (GPI)	\$	26	Personal Consumption Expenditures weighted by income distribution, with volunteer and household work added and environmental and social costs subtracted.	17 countries + regions	1950-present
Genuine Savings	\$	5	Level of saving after depreciation of produced capital; investments in human capital; depletion of minerals/energy/forests; and damages from air pollutants are accounted for	140 countries	1970-2008
Inclusive Wealth	\$	8	Asset wealth including, built, human, and natural resources	20 countries	1990-2008
Australian Unity Well-Being Index	Index #	14	Annual survey of various aspects of well-being and quality of life	Australia	2001-present
World Values Survey	Index #	100's	Periodic (5 so far) survey of a broad range of social, environmental, and economic variables	73 countries	1981-2008
Gallup-Healthways Well-Being Index	Index #	39	Annual survey in six domains: live evaluation, physical health, emotional health, healthy behavior, work environment, and basic assets	50 states in US	2008-present
Gross National Happiness	Index #	33	In-person survey in nine domains: psychological well-being, standard of living, governance, health, education, community vitality, cultural diversity, time use, ecological diversity	Bhutan	2010
Human Development Index (HDI)	Index #	4	Index of GDP/person, spending on health and education, and life expectancy	177 countries	1980-present
Happy Planet Index	Index #	3	HPI = subjective well being * life expectancy / ecological footprint	153 countries	3 yrs
Canadian Index of Well-Being	Index #	80	Includes community vitality, democratic engagement, education, environment, population, leisure, living standards, and time use	Canada	1994-present
National Well-Being Index	Index #	5	proxies for built, human, natural and social capital with weights based on regression with subjective well-being	56 countries	1 yr
OECD Better Life Index	Index #	25	Includes housing, income, jobs community education, environment, civic engagement, health, life satisfaction, safety, and work-life balance	36 OECD countries	1 yr
Well-Being of Nations	Index #	63	63 indicators in 20 domains weighted and ranked	180 countries	1990-2000

Genuine Progress Indicator (or ISEW) by Component

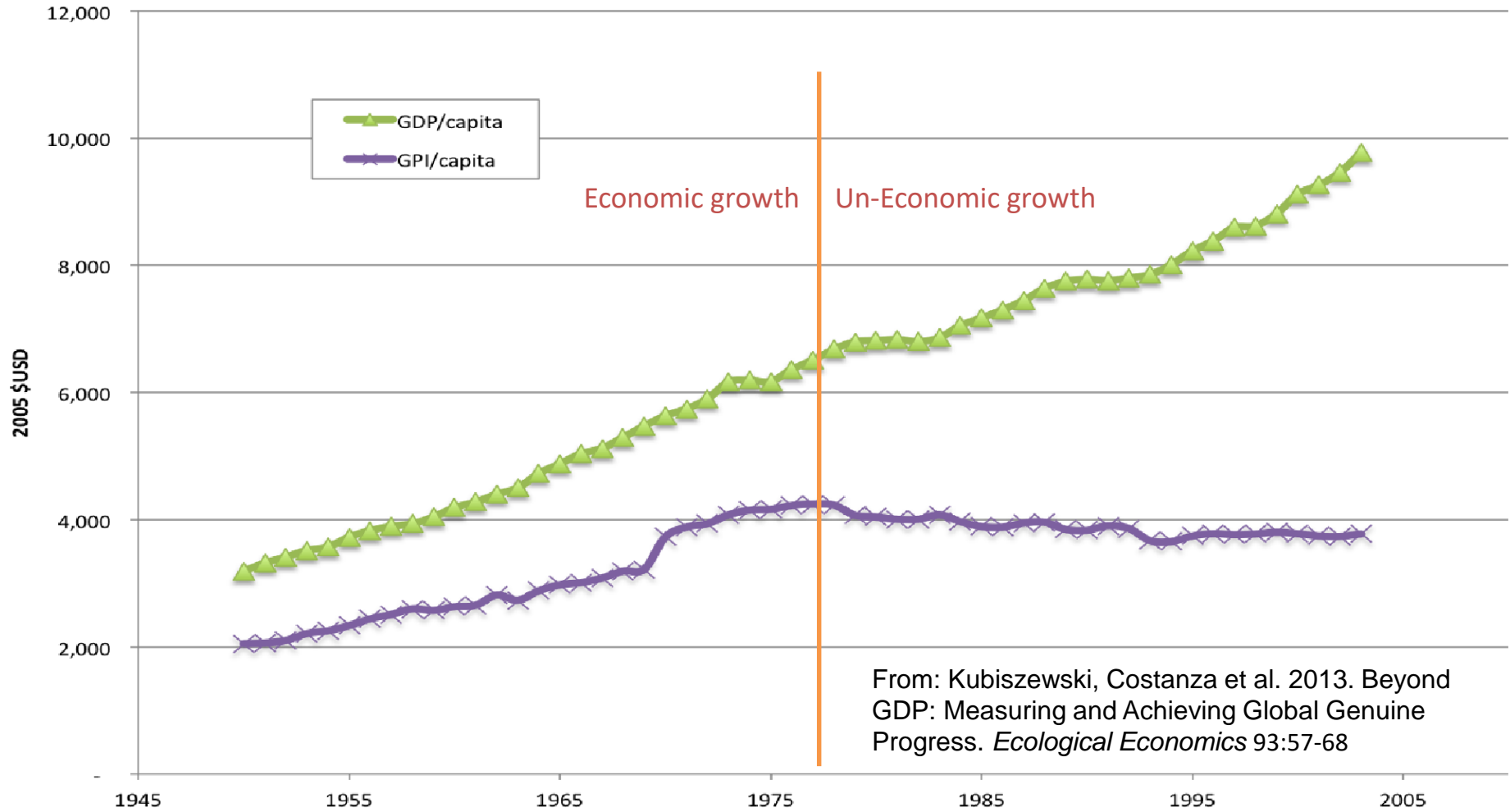


GPI /capita for the 17 countries for which it has been estimated

From: Kubiszewski, Costanza et al. 2013. Beyond GDP: Measuring and Achieving Global Genuine Progress. *Ecological Economics* 93:57-68



Global GPI/capita & GDP/capita





To create a sustainable and desirable economy-in-society-in-the rest of nature requires:

- Breaking our ***addiction*** to the "growth at all costs" economic paradigm, to fossil fuels, and to over-consumption
- A key step in the therapy is building a shared vision of a more sustainable and desirable future that focuses on the wellbeing of all life



Wellbeing Economy Alliance (WE All)

At a meeting in Glasgow, Scotland, in Oct. 2017, a group of five governments (Scotland, Sweden, Costa Rica, Slovenia, and New Zealand) committed to creating the Wellbeing Economy Alliance.

What is WEAll?



WEAll exists to help bring about a transformation of the economic system, of society and of institutions so that all actors prioritise shared wellbeing on a healthy planet.



WEAll is an alliance, and we welcome organisations and people as members that are working towards the creation of a wellbeing economy in any sector, anywhere in the world.



If you agree the economy needs to be transformed into one that serves people and planet and you embrace working with others to bring about change, then you are welcome to join WEAll.

Learn more about WEAll



wellbeingeconomy.org

Thank You

Papers mentioned in this presentation
can be downloaded from:
www.robertcostanza.com

