



Living Sustainable Development: Opportunities for Planets, Places and People

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RIO+20

**United Nations
Conference on
Sustainable
Development**

What's changed? What to look for?

Globally?

Regionally?

Locally?

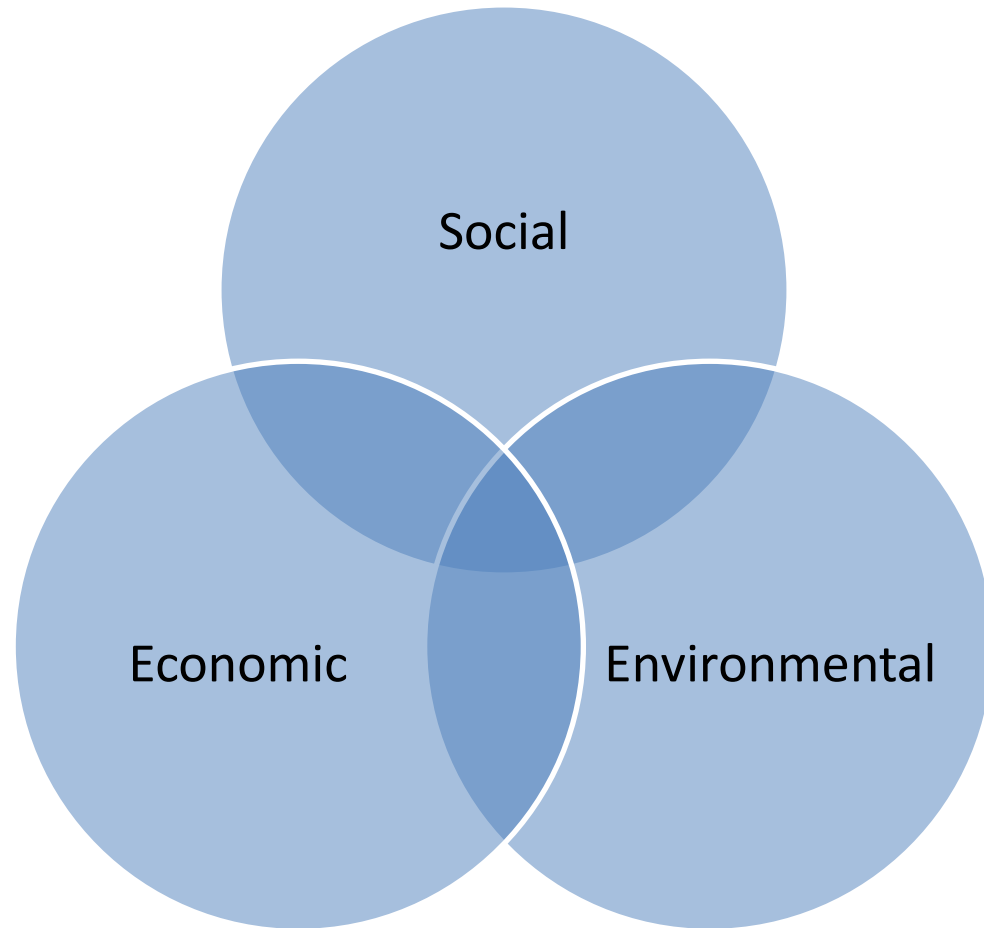


World Commission on Environment & Development (1987)

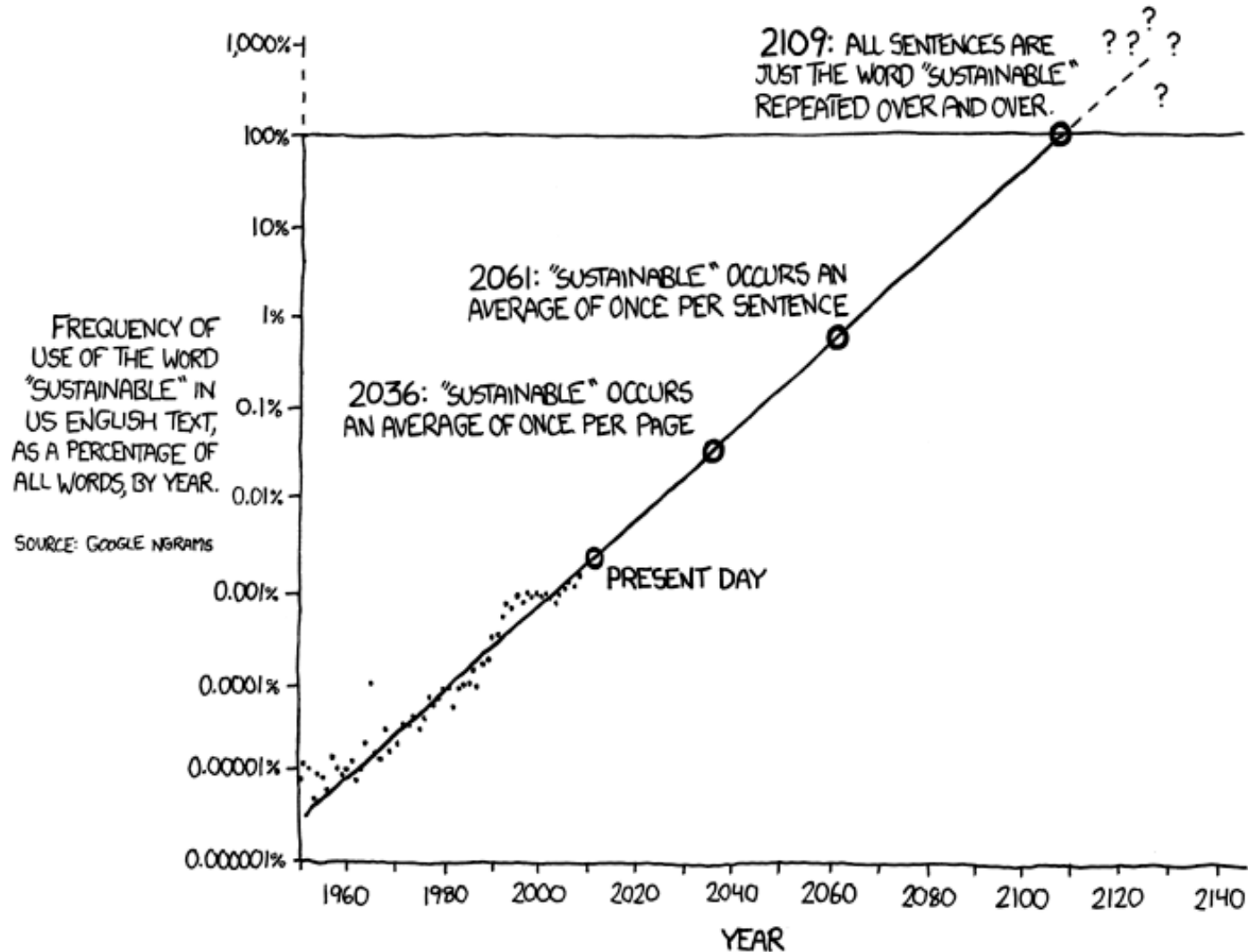
- “Environment is where we live; and development is what we all do in attempting to improve our lot within that abode. The two are inseparable.... “
- “Humanity has the ability to make development sustainable: to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.”



Three pillars of sustainable development



“Sustainability” is everywhere?





Formalizing Sustainable Development

- Goal: Manage interactions of society, economy, and environment to achieve non-declining (at least) human well-being for all peoples on intergenerational time scales
 - Captured in “inclusive wealth” (W): the social worth of society’s productive base (WBank, Dasgupta, Sarkozy)
- ‘W’ composed of capital assets...
 - Manufactured (roads, equipment, buildings) [C_m]
 - Human (health, education & skills) [C_h]
 - Natural (earth- & eco-systems, minerals & fuels) [C_n]
- Plus knowledge [K], institutions [I], population [P]

$$\blacktriangleright W = f \{(C_m, C_h, C_n), K, I, P\}$$



Last half century sees improvements in human well-being (W)

- Life expectancy at birth up: 46 → 70 y
- Infant mortality down: 13% → 4%
- Access to safe drinking water: <35% → 85%
- Literacy rate up: <50% → 85%
- GDP/capita up: 2.5+%/yr
- > 3 billion people improve living standards...

















Economic development without environmental protection...

- Kills the people development is meant to benefit
 - *Pollution leads to ~100 million years of life lost each year (number of people * years of life lost per person)*
- Limits our ability to produce essential food
 - *“Brown clouds” from biomass burning combined with climate change to significantly reduce growth of rice yields in Asia*
- Undermines economic growth itself...
 - *Pollution and resource degradation cost the median country around 1.5% points of its GNP growth/yr, with more than ¼ of countries losing >5% points of GNP/yr.*

Heading toward “A Perfect Storm...”
Interlinked needs of 9B people...

Water
+30%

Food
+50%



Climate
+1°C by 2030

Energy
+50%

**Specific
diseases**
+50%



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Rio+20: A sustainability dialogue?



Global dialogue evolving...

Rio 1992 (UNCED)

- Environment agreements
 - Ozone, climate, biodiversity, forests
- Governance
 - Top down planning
 - Agenda 21 protections
 - Include civil society
- Knowledge needs
 - Earth system science, global monitoring

Rio + 20

- Development agreements
 - Jobs, energy, food, water, cities, disasters
- Governance
 - Polycentric governance
 - Green growth
 - Public/private partnerships
- Knowledge needs
 - Sustainability science, decision support systems



Regional Varieties of Sustainability

What's to be sustained? What's to be developed?

- Nature
 - Earth, biodiversity, ecosystems
- Life support
 - Ecosystem services, resources, environment
- Community
 - Cultures, groups, places
- People
 - Child survival, life expectancy, education, equity, opportunity
- Economy
 - Wealth, productive sectors, consumption
- Society
 - Institutions, social capital, states, regions

What ought to be *our* use of the earth?

Favorite Regional Responses to the Sustainability Challenge....

- King's County, USA
- Amazonia redux, Brazil
- Murray-Darling water rights, Australia
- Naivasha Basin PES initiatives, Kenya
- EU experiment in C emissions trading

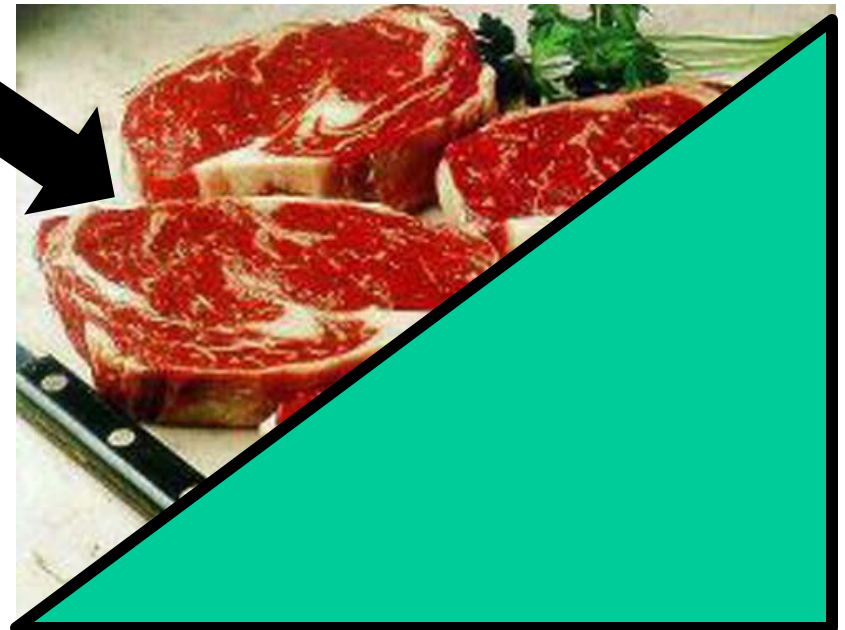
Local opportunities for “Bending the Curve” toward sustainability

- The Challenge...
 - Average US consumer needs to achieve economic and social goals needs while reducing environmental pressures by 10-20% per decade
- Feasible responses
 - Corporations are doing it
 - Harvard is doing it (GHG goal of -16% in 10yr)
 - Options for individuals?

Personal environmental choices: 10% Reductions in household impact

- Food
- Transportation
- Household energy use, habitation
- Last resorts (if all else fails)

Food you eat (the biggest hit!):
Halve your meat consumption





Energy (home)

50% renewables; change thermostat





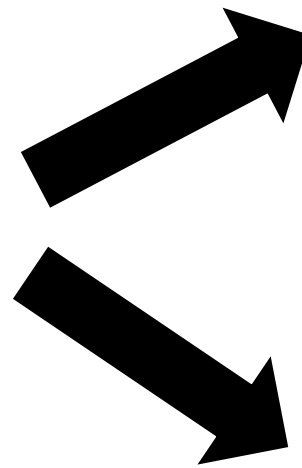
Energy (cars): Trade in the SUV for a *Prius*





Energy (commute)

Move in from the burbs... or take the train



Energy (Air travel): Trade 2 Asian trips for video

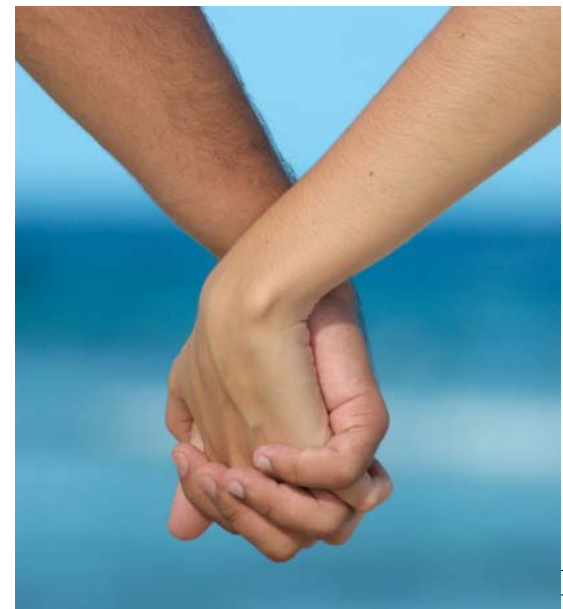


Living: Boston is better (than anywhere)

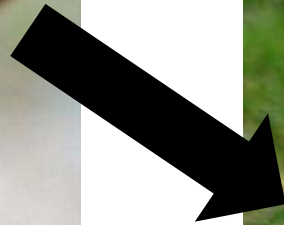




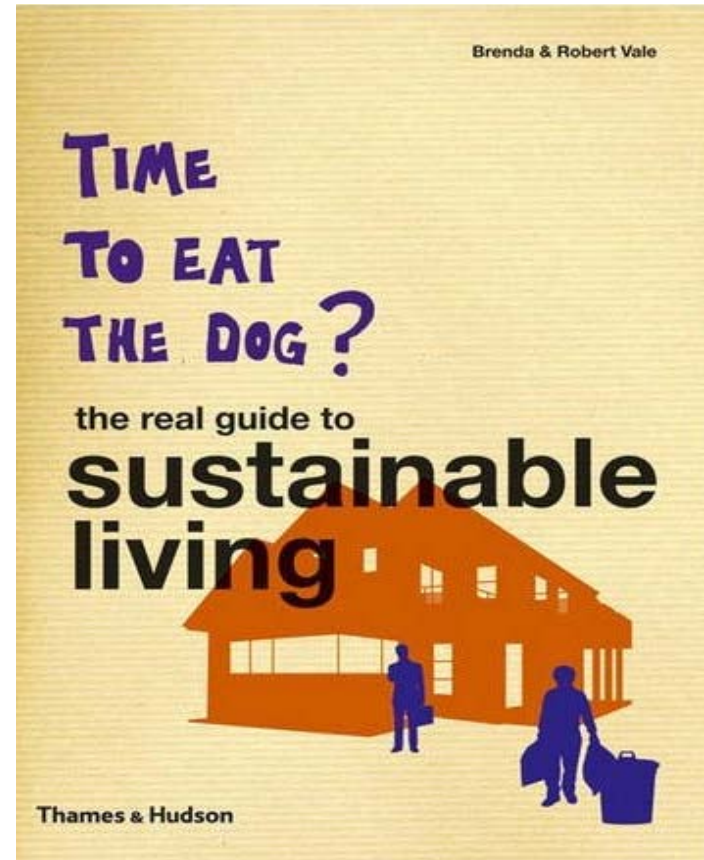
Living:
Together is (much) better...



And as a last resort...
Trade the dog for a guinea pig



Or more drastic solutions...

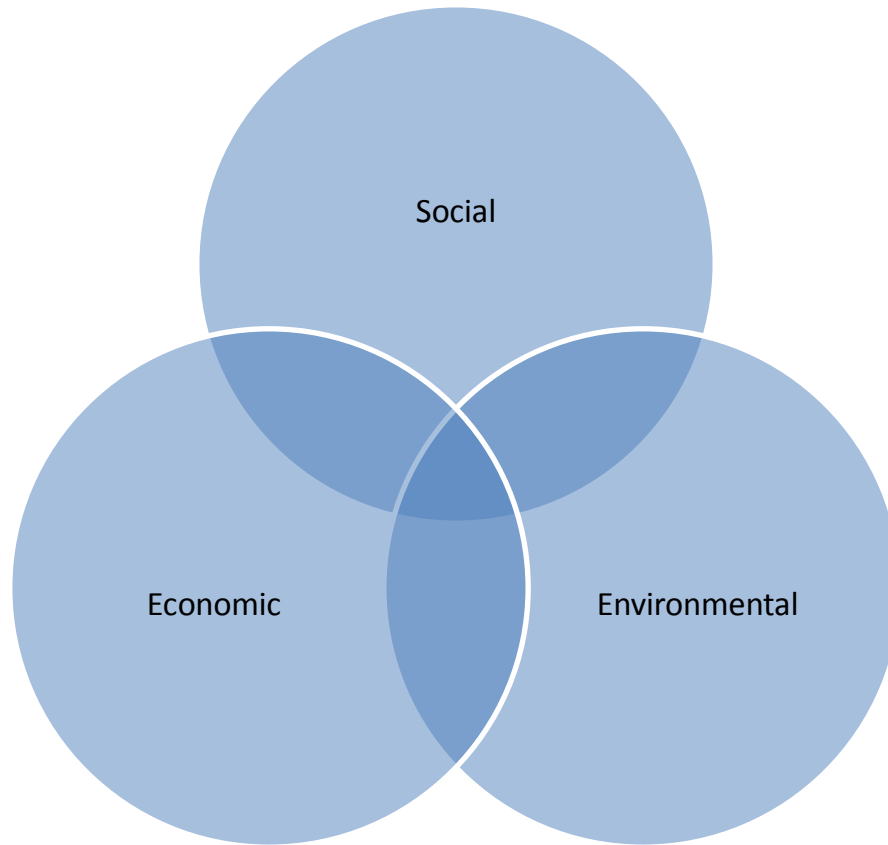




Household **Environmental** choices: “10% Solutions”

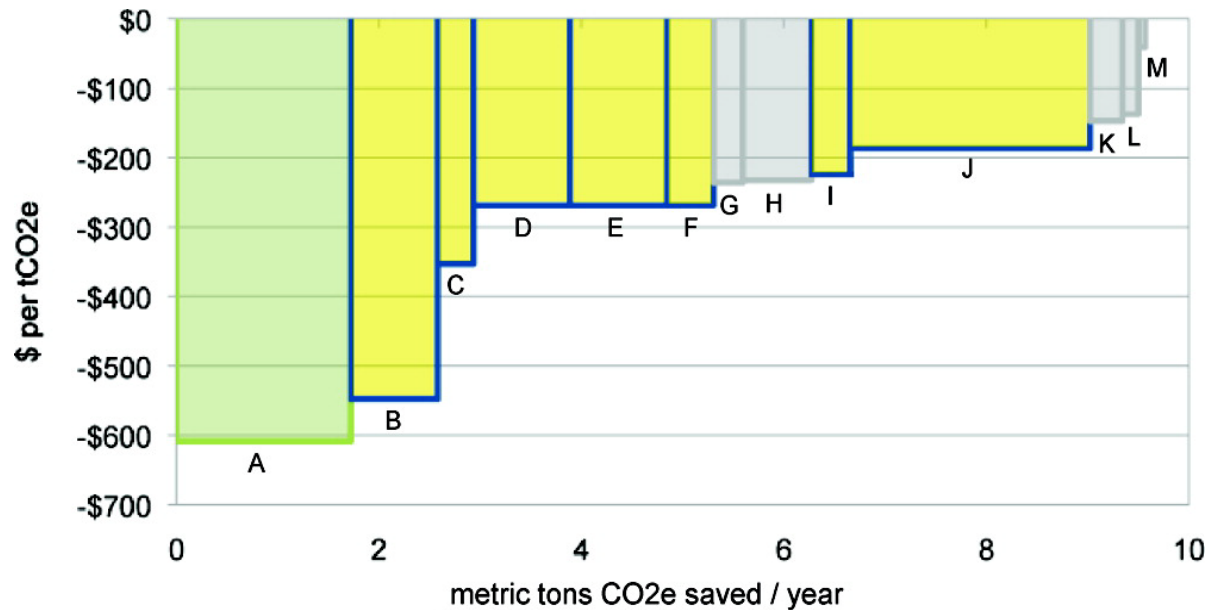
- Food: Halve meat consumption
- Home energy: 50% renewable, adjust thermostat
- Auto: Trade-in SUV for a Prius
- Commuters from far away: Move in or take train
- Air travel: Trade 2 Asian RTs for videoconf
- Living: Stay in Boston... and
- Cohabit (with or without children)
- Finally: Trade-in dog for a guinea pig

But “sustainable development” is more than saving the environment



But what about the **Economics**?

GHG Abatement Curve for US Households



A - Change diet
B - Telecommute
C - Take transit
D - Eco-driving
E - Maintain vehicles

F - Ride bike
G - Turn up thermostat
H - Turn down thermostat
I - Reduce flying

J - Trade in vehicles
K - Buy CFLs
L - Line-dry clothes
M - Energy Star fridge

(Jones and Kammen, 2011)



The Social Dimension: What kind of community do we want?



“Complete Streets” Initiative





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What's

What to look for?

LEADERSHIP MATTERS!
(Just do it!)

- Goalally?
- Regionally?
- Locally?

Tools for managing sustainability

- Global footprint network
 - Integrates multiple dimensions of environment
 - http://www.footprintnetwork.org/en/index.php/GFN/page/personal_footprint/
- Cool climate network (Berkeley)
 - Best C calculator, consumption- & life-cycle based
 - <http://coolclimate.berkeley.edu/carboncalculator>
- iTree
 - Calculate the savings from your, or your town's, trees
 - <http://www.itreetools.org>