



Sustainable Economy

Today

- Questions about the class
- Sustainable Economy Lecture
 - With your footprint
- Practice cycle activities

Biocapacity

- Resources from nature are limited
- Worldwide we are using more resources than nature can replenish
- Diminishing resources could lead to economic instability across the world

Competitiveness 2.0

- Competitive Advantage Theory: States should grow productivity and adopt policies that allow businesses to create high-quality goods at high prices – Michael Porter



Competitiveness 2.0

- Competitiveness 1.0 assumes well being of a country is:
 - Measured by GDP
 - GDP would improve by creating beneficial regulatory frameworks for business growth
 - Would increase business revenues and salaries
 - Boost tax income
 - Allows country to invest in social structure and build social capital



Competitiveness 2.0

- Impact of Competitiveness 1.0
 - Income seen as primary contributor to well-being
 - GDP main indicator of progress
 - Gov't use internal regulations and trade agreements to create growth of private industry



Competitiveness 2.0

- Negative impact of Competitiveness 1.0
 - Ignores factors critical to success
 - All life requires ecological resources
 - Industry uses the easiest to access resources creating supply pressures
 - Current metrics ignore resource constraints
 - Create shortages
 - Overshoot biocapacity
 - Leading to resource risks

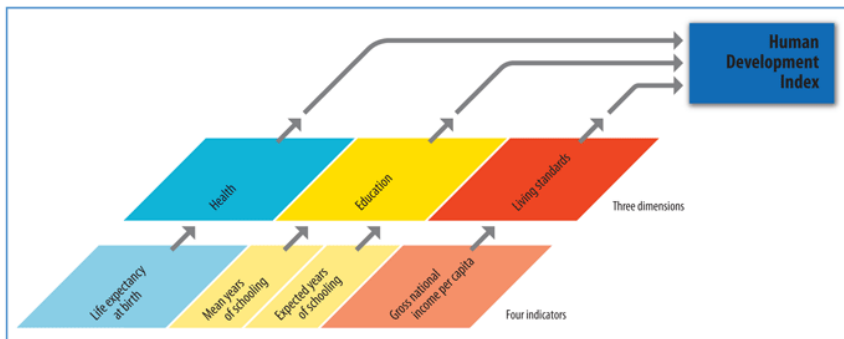


Competitiveness 2.0

- New competitive models should include:
 - Understand resource risks and biocapacity limits
 - Find a way to procure resources most efficiently – take a worldwide view
 - Go beyond GDP to measure well-being

Components of the Human Development Index

The HDI—three dimensions and four indicators



Note: The indicators presented in this figure follow the new methodology, as defined in box 1.2.

Source: HDRO.



Global Footprint Network
Advancing the Science of Sustainability



Re-evaluating Metrics

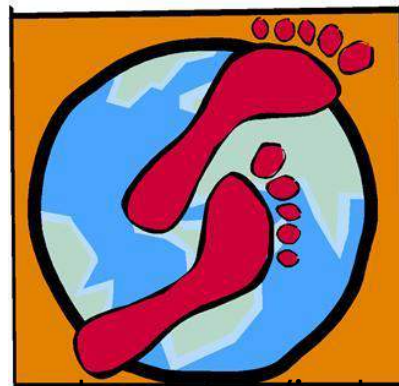
- GDP – total \$ value of all goods and services
 - Does not measure many factors including the wellbeing of people
 - Focuses on short-term development
 - High levels of consumption does not guarantee happiness
- Maybe we should look at alternative measurements: WBI, HDI

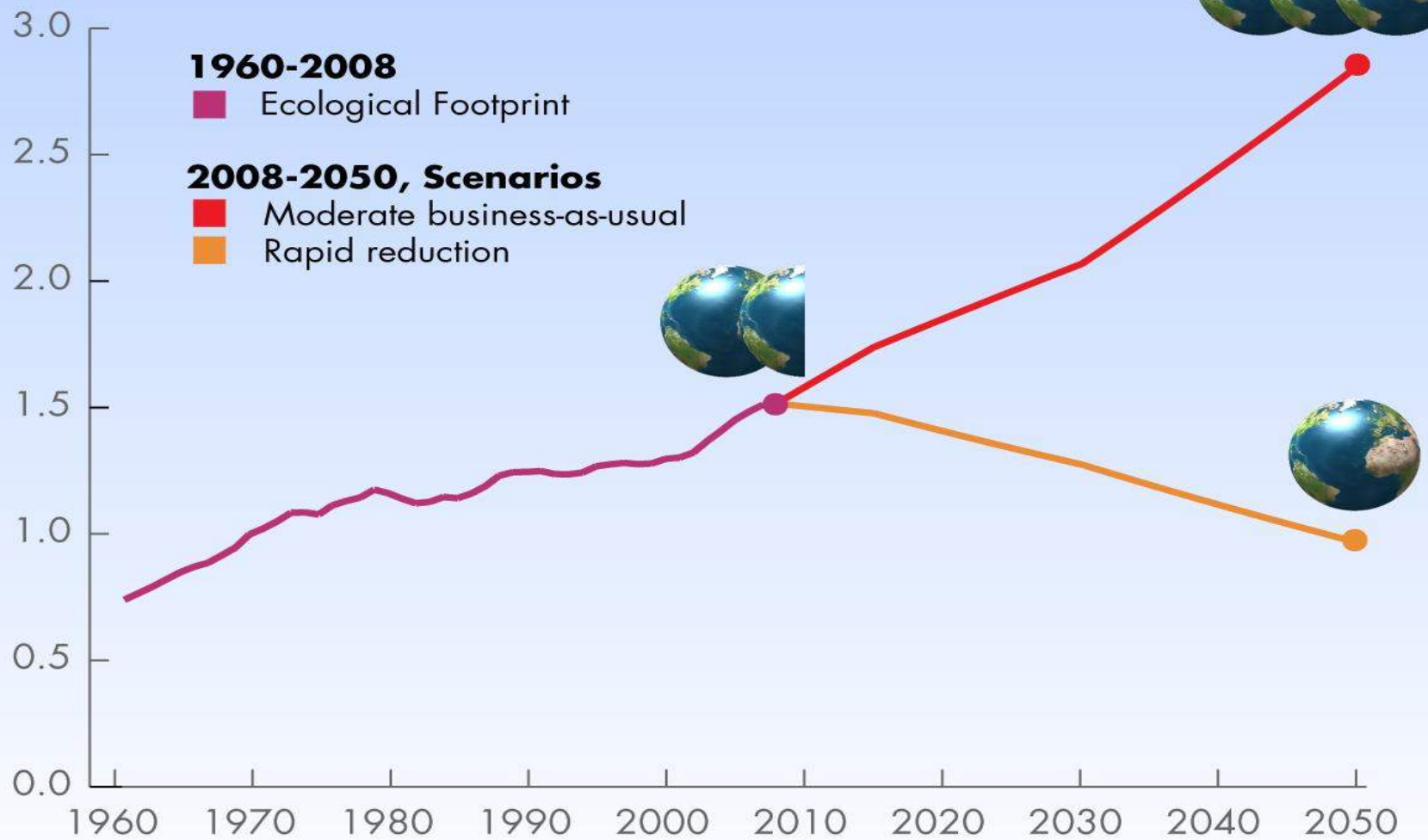
<http://www.happyplanetindex.org/>

<http://hdr.undp.org/en/countries>

Sustainable Consumption

- Ecological footprint – measures how much land and water area a human population requires to produce the resources it consumes and to absorb its wastes
- What is your ecological footprint?



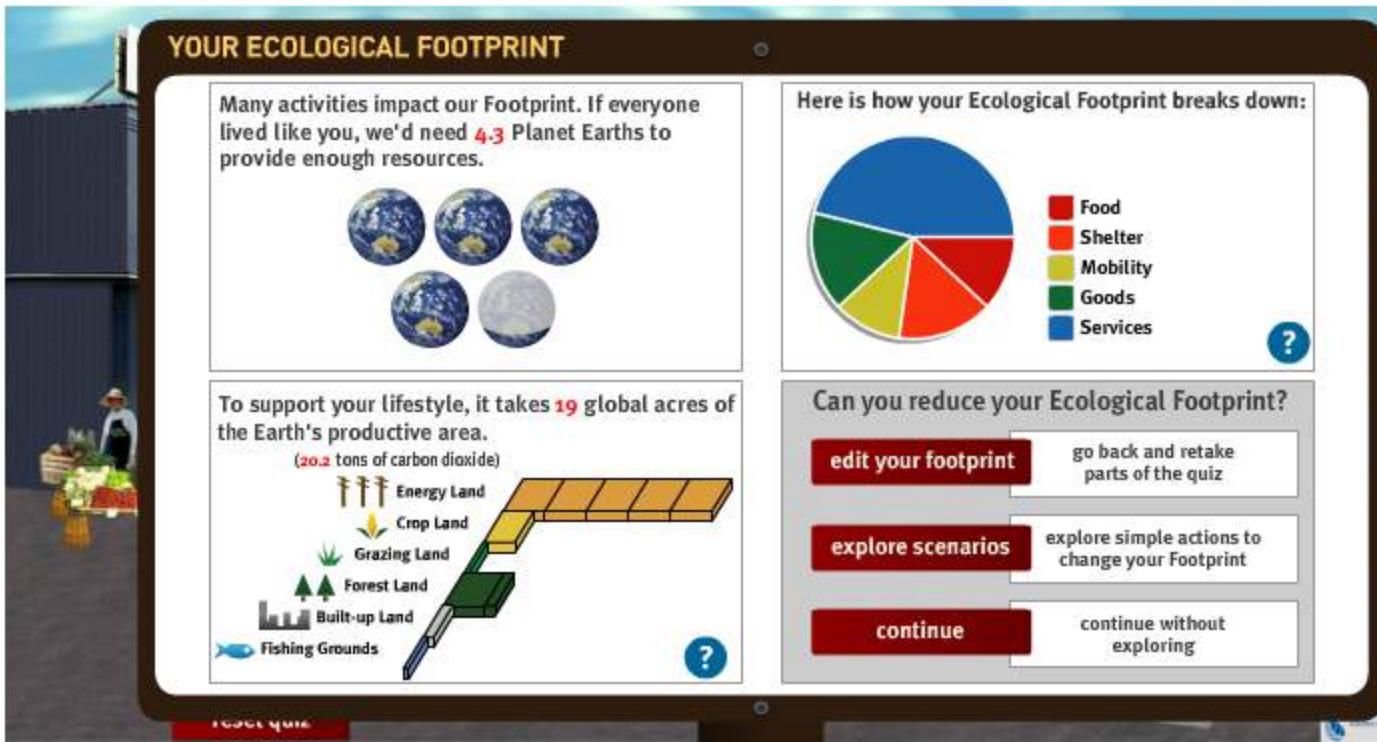


y-axis: number of planet earths, x-axis: years



Footprint Calculator

How much land area does it take to support your lifestyle? Take this quiz to find out your Ecological Footprint, discover your biggest areas of resource consumption, and learn what you can do to tread more lightly on the earth.



Why is Calgary on the map, but not Canada? Why are only some countries available?

To create these calculators, Global Footprint Network works with local partners to gather regional data on resource consumption. We created the Calgary city calculator as part of our [partnership with the City of Calgary](#). Canada residents take the Calgary quiz or the US quiz to get approximate results. Global Footprint Network is inviting corporate, government and NGO partners to help us add additional cities and countries. Please email calculator@footprintnetwork.org if you would like more details.

Building a Green Economy

- How do you think the current political atmosphere regarding sustainability initiatives has or hasn't changed since this article was published?
- Do you think individual consumer perceptions regarding climate change and sustainability issues has changed recently?
- Do you think placing strict restrictions on things such as emissions are worth it?

Economics

- Learn what the incentives are to pursue unsustainable behavior
- Understand how to change the incentives toward more sustainable behavior
- “Building a Green Economy” reading



The Commons

- A Common: a geographical area not owned by any private person or legal entity, and any natural resources contained in a commons thereby belong to everyone
- Can also refer to knowledge and culture

Overfishing: <https://www.youtube.com/watch?v=F6nwZUkBeas>

How do we manage the commons?

- Chamber of Commons?
- Put a financial value on the commons?
- Let the market work things out?
- Tradable permits?

Externalities

- Typically, the market sets the value of a product or service
- Externalities: The effects that the company's activities have on the environment and people
- Who pays for the externalities caused by companies?
- Keep in mind: costs or benefits to the company are often different from the costs or benefits to society as a whole

Market Based Instruments

- Quantity based instruments – markets for the right to undertake a negative activity. Used when there is a measurable target to be achieved. Provide more certainty than price based instruments
 - Tradable permits
 - Quota management
 - Offsets

Market Based Instruments

- Price Based Incentives - change the prices to reflect their relative impact. Know how much it will cost to comply, but impact uncertain.
 - Taxes
 - Subsidies
 - Charges
 - Deposit-refund systems

Pigovian tax

- Pay a fee for negative externalities
- Negative reactions from environmental activists
- Would it be successful?
- = Tradable emissions permits/cap and trade

Market Based Instruments

- Market friction instruments
 - Aim to influence how existing markets work to improve outcomes
- Product differentiation
 - Certifications
 - Eco-labels



Pros & Cons MBIs

- Pros
 - Cost-effect for desirable outcomes
 - Can give better results
 - Provide flexibility
- Cons
 - Can also be inflexible
 - Takes time to pass legislation
 - Little oversight
 - Current politics

Resource of Gas

- What can we do to reduce gas consumption?



- What are the implications to:
 - Society
 - Business?
- What would be the impact of different solutions?
- How feasible are some of the solutions?
- What has worked in other places?

One Way to Limit Emissions

Most industrialized nations tax energy use at a much higher rate than the United States to combat climate change.

Average effective tax rates on carbon emissions, in dollars per metric ton.

Switzerland	\$141
Luxembourg	123
Norway	123
Netherlands	116
Denmark	107
Sweden	103
Ireland	101
Iceland	100
Italy	100
Israel	96
Britain	96
Slovenia	90
Greece	89
France	80
Finland	79
Germany	77
Austria	76
Spain	63
Portugal	63
Belgium	60
Turkey	51
Japan	49
Hungary	47
Slovakia	44
Czech Republic	41
New Zealand	41
South Korea	35
Estonia	34
Poland	34
Australia	28
Chile	21
Canada*	10
United States*	6
Mexico	4

*Federal government only.

Notes: Average across all fuels and uses of energy. Taxes measured in April 2012.

Source: Organization for Economic Cooperation and Development

Cap-and-trade/carbon trading

- Market based approaches to control pollution
- Attaches monetary incentives to carbon reduction
- Sets a limit (cap) on the amount of carbon/pollution a company can emit
- If your company is under the cap you can sell your credits. If above, you need to buy credits
- Generally, over time the cap is reduced

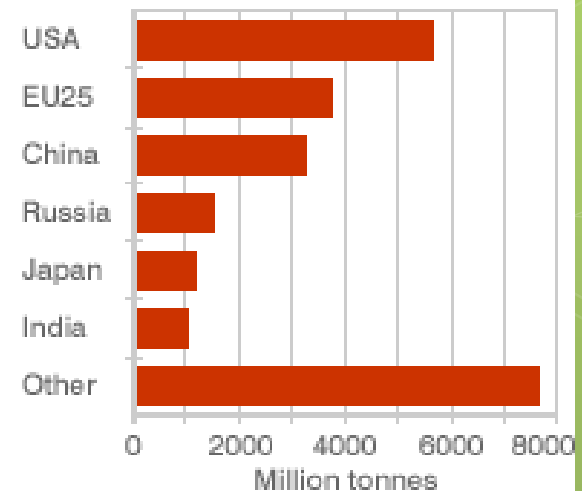
The Kyoto Protocol

- An international agreement setting targets for industrialized countries to cut GHGs
- Became a binding treaty February 2005
- Two large industrialized countries that did not support the protocol

<http://www.theguardian.com/news/datablog/2011/jan/31/world-carbon-dioxide-emissions-country-data-co2#zoomed-picture>
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BIG CO₂ EMITTERS

Emissions from fuel combustion, 2002



SOURCE: IEA

The Kyoto Protocol

- Countries meet targets primarily through national measures
- Protocol also offers different market-based mechanisms
 - One major one was emissions trading

The Kyoto Protocol

- Many countries did not meet their targets
 - France, Sweden and the UK did make their targets
- Many people view it as a failure
 - What is good about this treaty?
 - What went wrong?
- Brings about the concept of carbon trading

European Union Emissions Trading System

- Launched 2005
- Limit on the total amount of greenhouse gases (GHGs) that can be emitted by the factories, power plants, and airlines, **emissions limits reduced each year**
- Companies receive emission allowances which they can sell or buy from one another
- At the end of year each company surrenders allowances to cover all its emissions, otherwise heavy fines imposed
- If company reduces emissions, it can keep spare allowances to cover future needs or sell them to another company that is short of allowances
- 2020 emissions will be 21% less than 2005



European Union Emissions Trading System

- Some feel it is not working
- ETS prices have gone down, there is an oversupply
- Blamed for giving too many ETSs
- Also, economic downturn reduced demand
- But,
 - It has significantly reduced greenhouse gas emissions

Regulation: Cap-and-trade

- California
 - 2006: passed the nation's most comprehensive climate law, mandating a cut in carbon pollution to 1990 levels by 2020 — about 10% below today's emissions
 - Senate turned down similar legislation in 2009, California moved forward
 - Plans to cap GHGs at 600 industrial plants and allow companies to buy and sell emissions permits as modeled on Europe's cap-and-trade system

<http://latimesblogs.latimes.com/greenspace/2011/04/california-cap-and-trade-carbon-trading.html>

Regulation: Cap-and-trade in California

What does this do to California business?

Carbon Offsets

- What are they?
- How do they work?
- Difference between a carbon credit and a carbon offset?

Carbon Offsets Credits

- The Carbon Hunters

<http://www.carbontradewatch.org/video/the-carbon-hunters.html>

- What were the unintended consequences of the carbon credits?
- Carbon credits, good or bad?

Carbon Offsets

- Pros
 - Some use funds to invest in projects to reduce greenhouse gases
 - Can work within the market for tradable credits
 - Over the long-term this can make a substantial impact
 - Quantifies externalities
- Cons
 - No immediate benefits
 - Hard to tell the impact
- Potential revenue goes to industry instead of the gov't (different from a tax)

Regulations

Which environmental regulations most influence your workplace?

Paris Climate Agreement

- Agreement dealing with greenhouse gases emissions mitigation, adaptation and finance
- Entered into force Nov. 4, 2016
- Global response to keep global temps below 2 degrees Celsius

Practice cycle time

Reminders

- Complete quiz in the GBL by Monday
- Readings on BB