


A Green Economy:

What is it, and how to get there

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Making markets work *for* the environment.

What I'm Going To Say

1. WHY do we need a Green Economy?
2. WHAT is a Green Economy?
3. HOW to get there?
4. WHAT can the CEC do?

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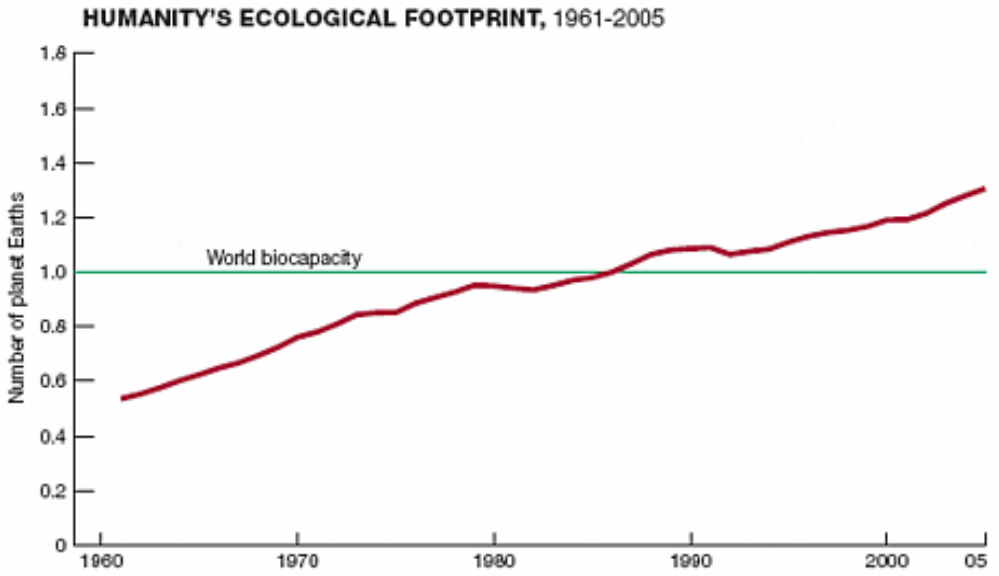
1. Why Do We Need a Green Economy?

Environmental

and

Economic reasons

We're Using Up the Earth's Resources



"More than 60% of the Earth's ecosystem services are being degraded or used unsustainably"

Millennium Ecosystem Assessment (2005)

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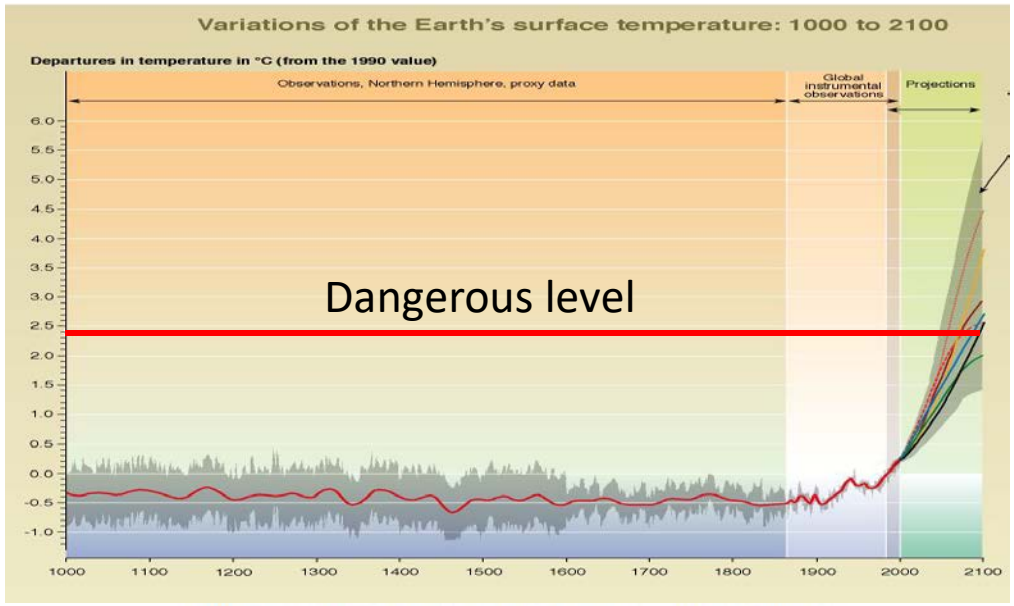
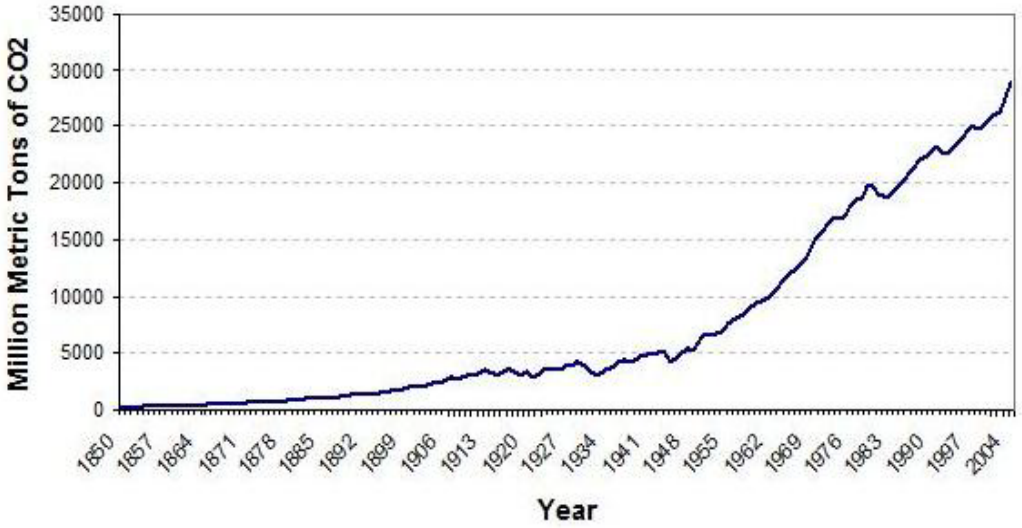
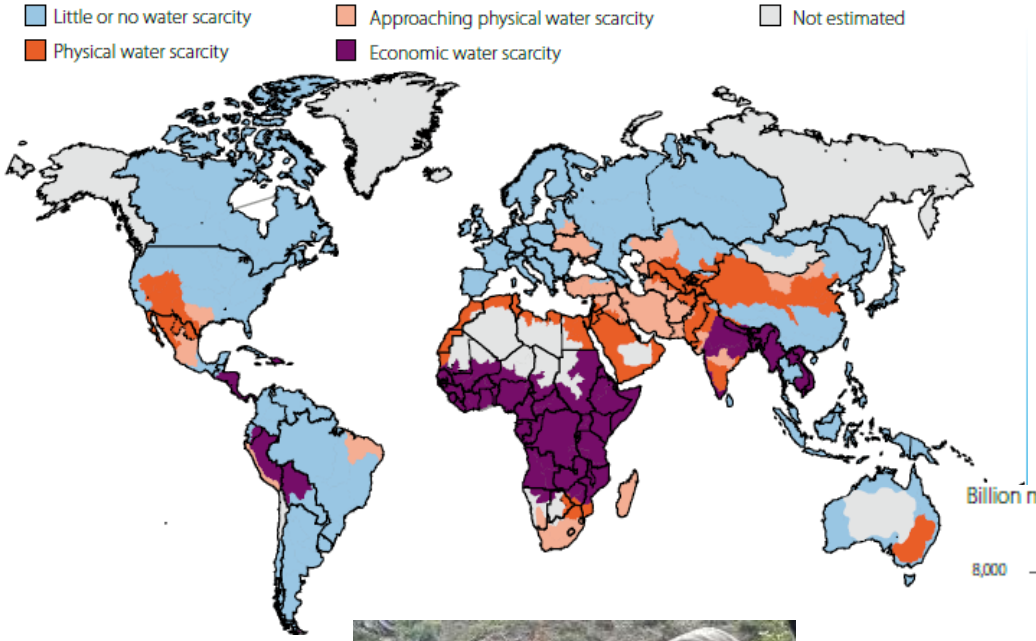
Climate Change

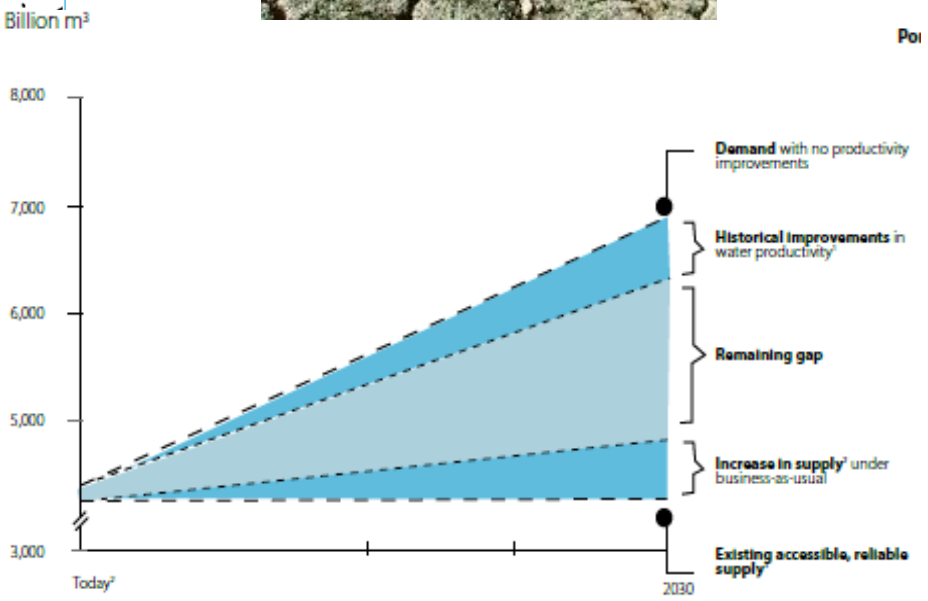


Historical Global CO_2 Emissions* (1850-2004)



Water Scarcity





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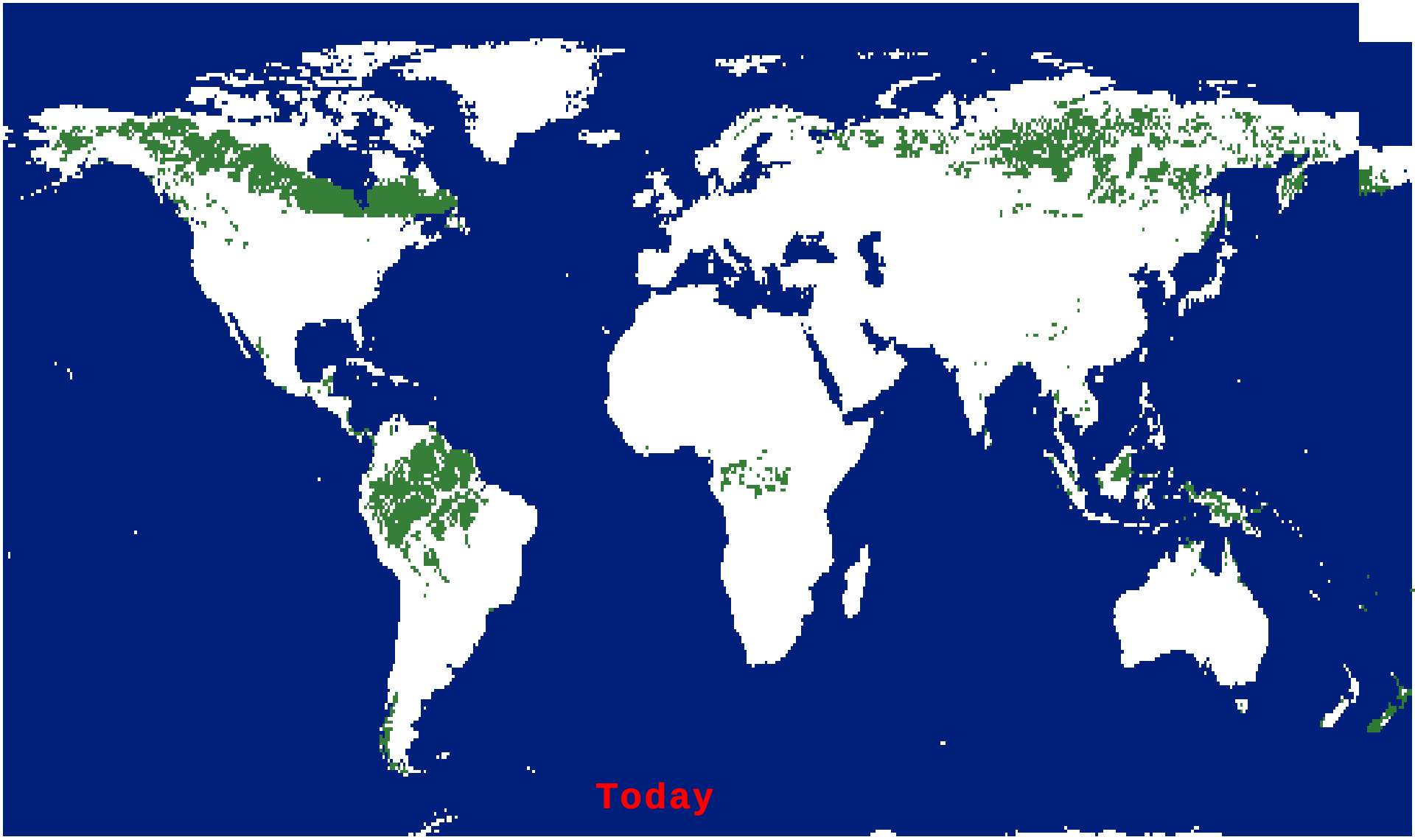
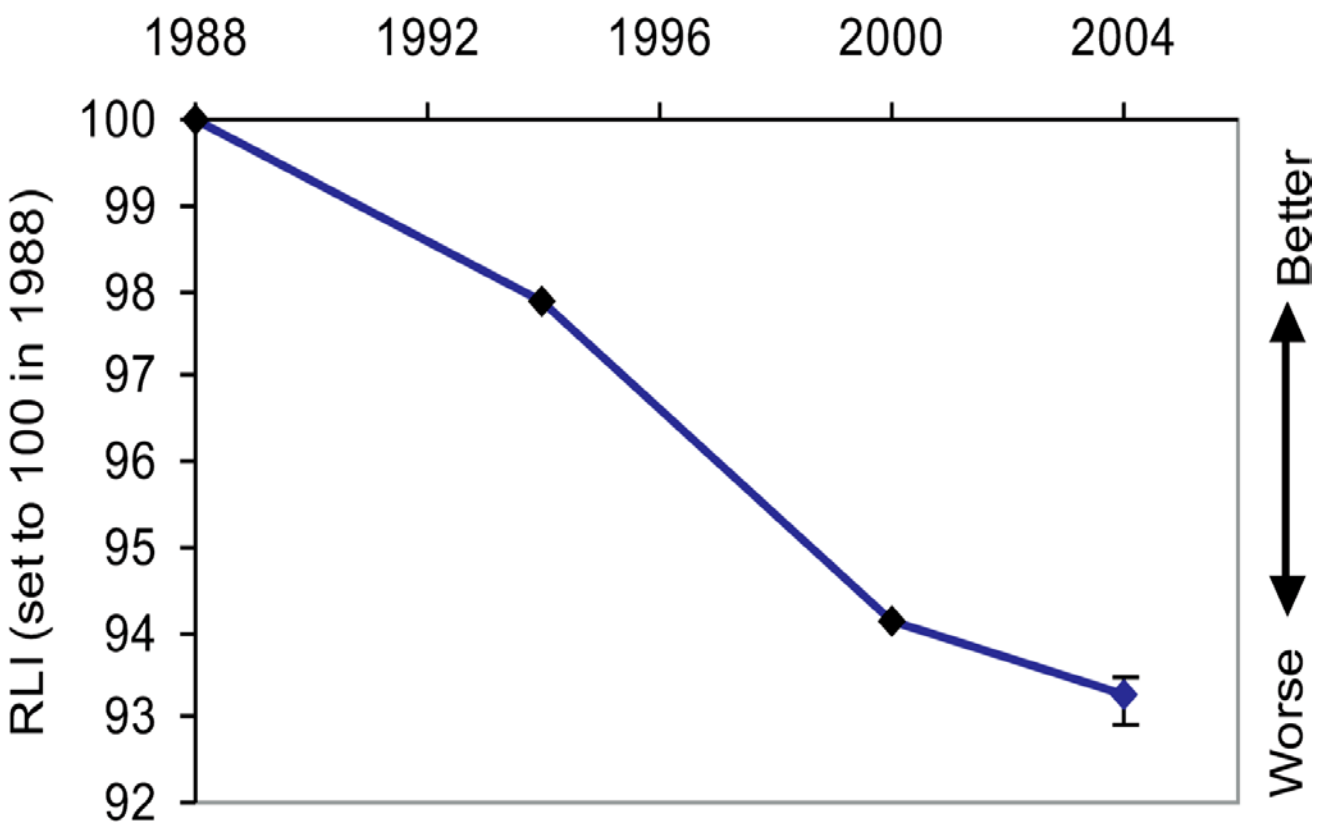
Forest Loss



Vanishing Species

The IUCN Red List for All Bird Species



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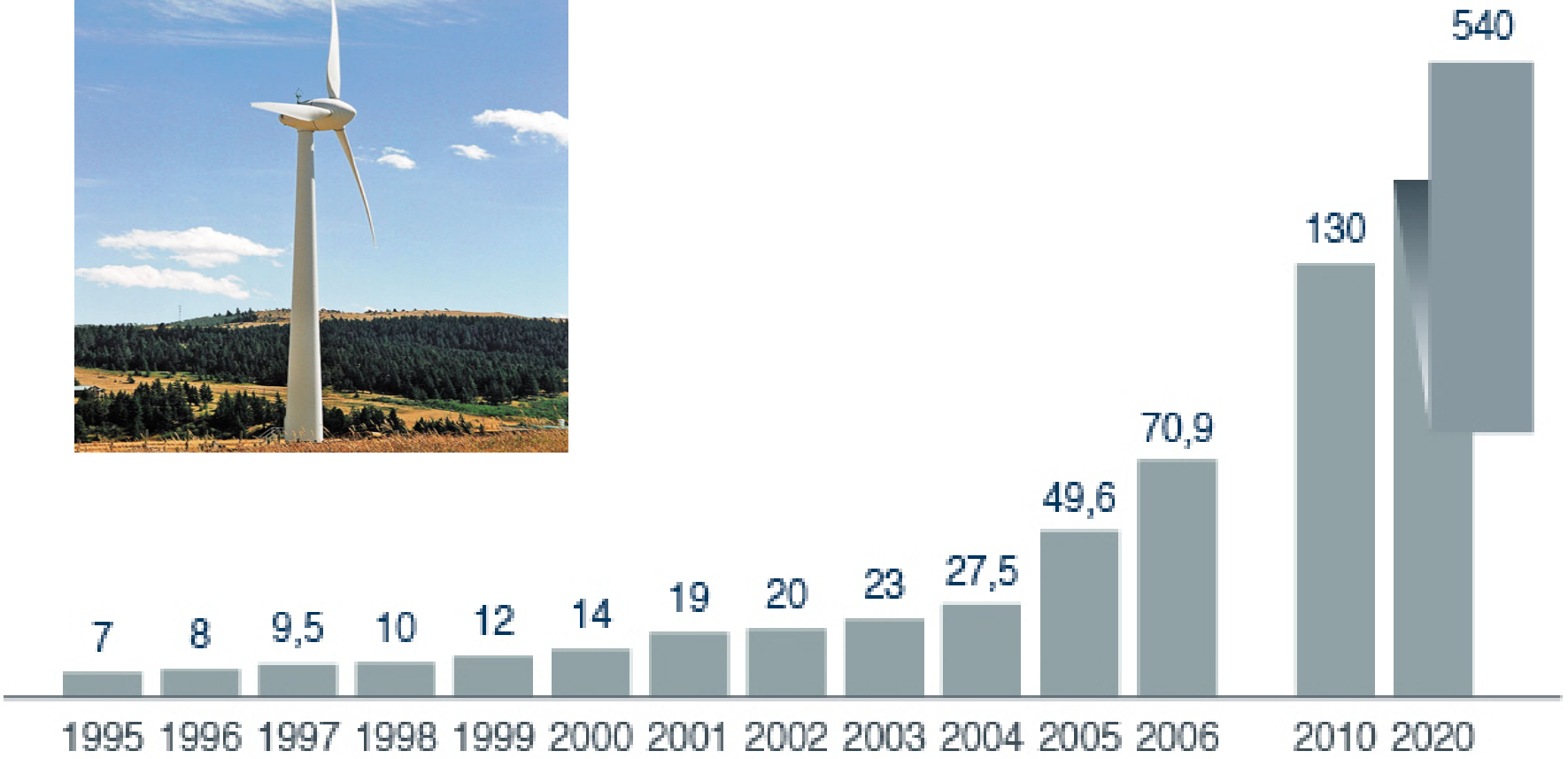
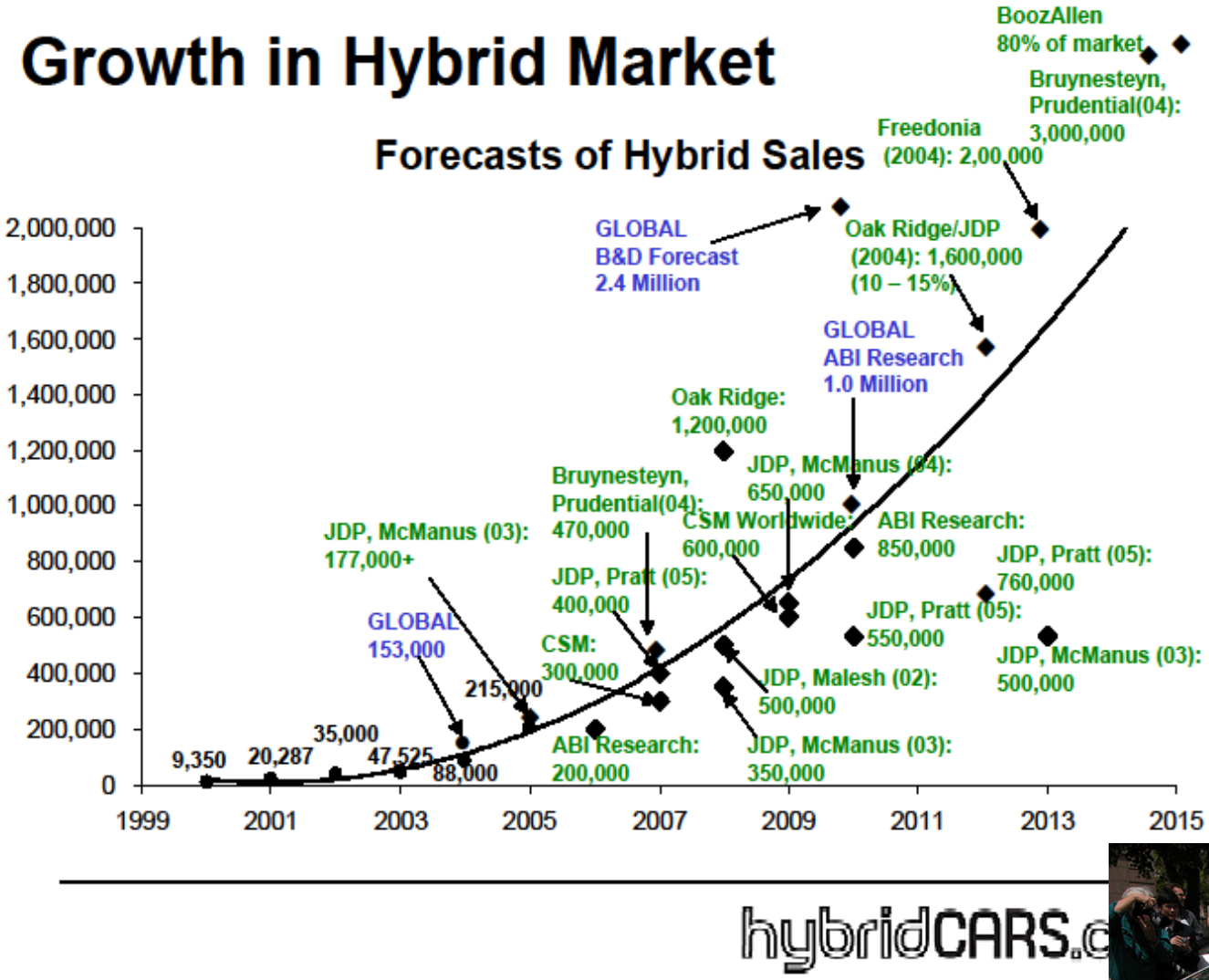
Growing Economic Opportunity

Renewable Energy Investment



Source: New Energy Finance, Worldwatch Institute

Growth in Hybrid Market



hybridCARS.c

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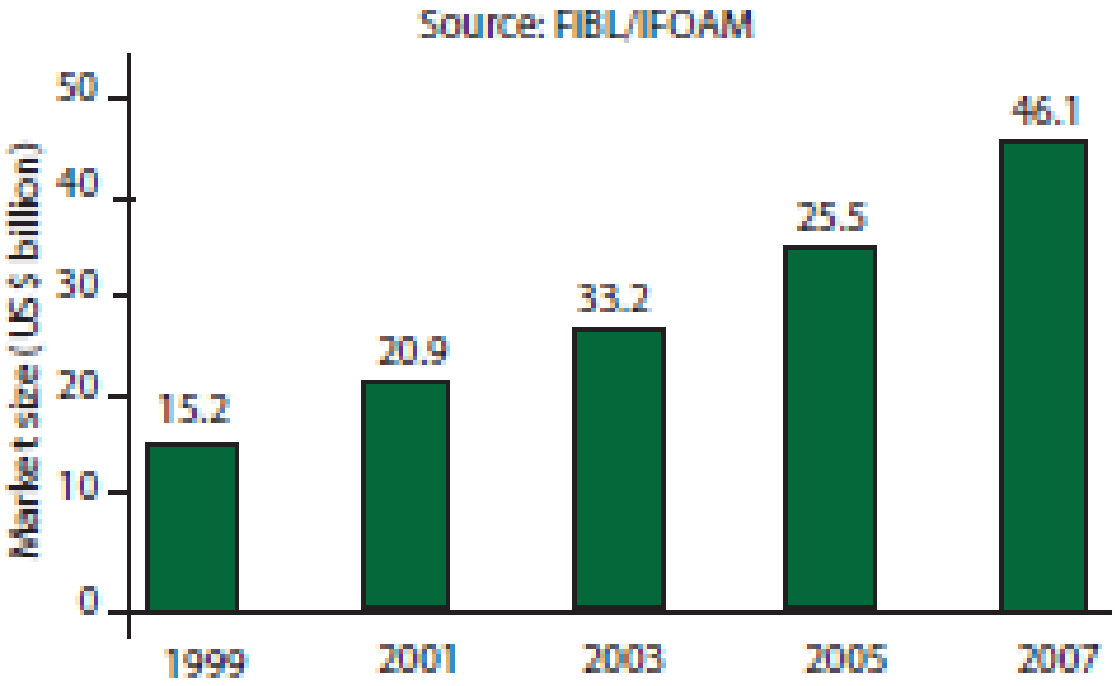
Organic Food Sales



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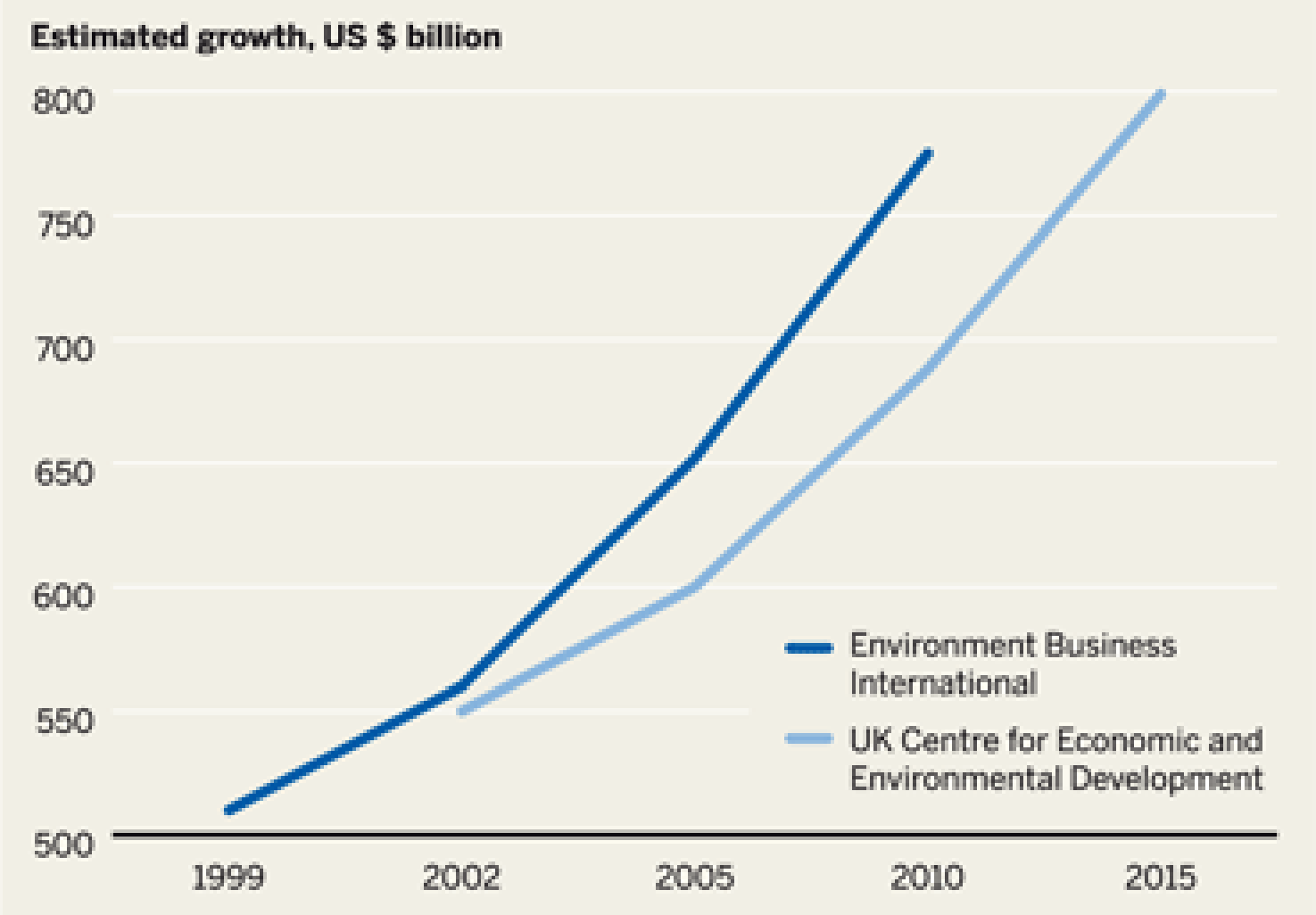
Global Environmental Business



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So Building a Green(er) Economy is ...

Ecologically essential

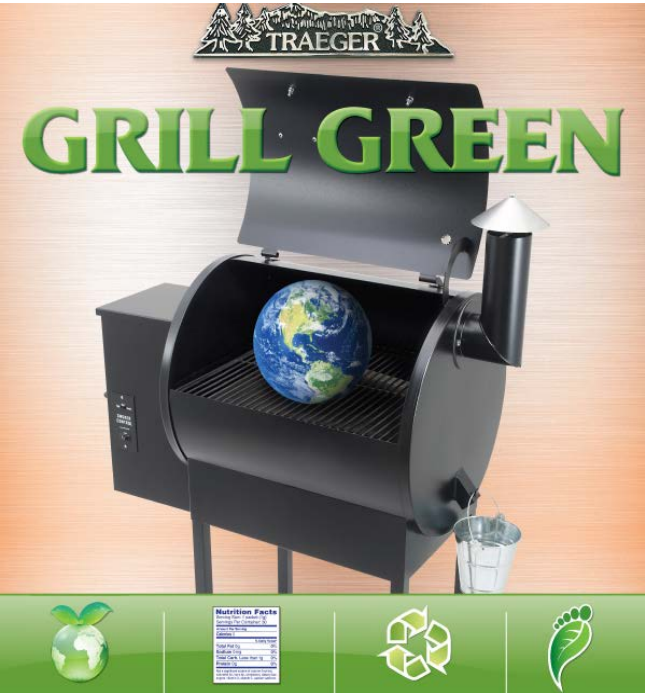
and

Economically smart

2. What is a "Green Economy"?

MOHAWK
Mother Nature's Gas Station

bp
beyond petroleum



What is a "Green Economy"?

UNEP: "A Green Economy can be defined as an economy that results in improved human well-being and reduced inequalities over the long term, while not exposing future generations to significant environmental risks and ecological scarcities".

??

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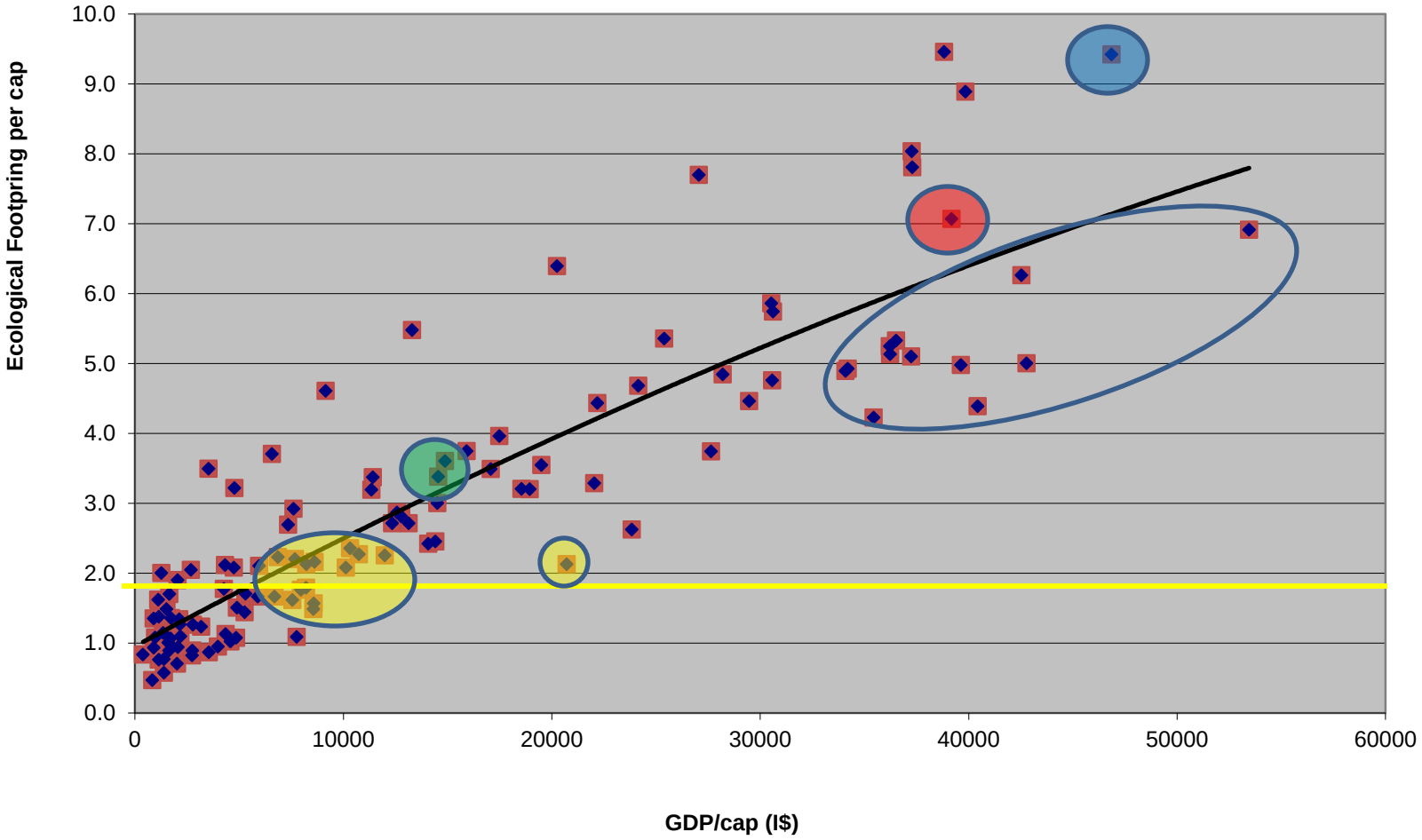
Is it …

- *An economy that minimizes its environmental impacts?*

- By that measure, the 'greenest' economies are
  1. East Timor
  2. Bangladesh
  3. Malawi
  4. Haiti

  (lowest ecological footprints per capita)

Ecological Footprint and GDP per capita



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North American Economy not very 'Green'

Environmental Performance (OECD)

Source: Gunton et al., Simon Fraser University (2010)

(Based on 28 environmental performance indicators, e.g.: pollution (air, water), waste, GHGs, forest loss, endangered species, pesticide use, etc.)

Overall country ranking

1. Denmark
2. Sweden
3. Norway
4. Switzerland
5. Germany
6. Austria
7. Netherlands
8. Italy
9. United Kingdom
10. Finland
11. New Zealand
12. Korea
13. Spain
14. Japan

...

24. Canada

25. United States

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Is it …?

- *An economy that generates prosperity (wealth) with minimal environmental impact*
  - i.e. *combines* economic *and* environmental success
- Better term: "**Green, Prosperous Economy**"
- CEC draft plan: "Simultaneously enhancing *industrial competitiveness* and decreasing environmental impact." [*GOOD*]
- Problem: We don't have the words to describe (simply) this kind of economy, or the metrics to measure it.

How Might We Measure Green Prosperity?

Economic Metrics:

- **GDP:**
  - Current snapshot of economic success
- **Global Competitiveness Index**
  - Positioning for future economic success
  - 100+ factors: institutions, markets, innovation, etc

➢ *Both give little weight to environmental costs*

  - e.g depletion of natural capital, pollution

Environment-Economy Metrics

Environment Metrics:

- **Ecological Footprint:**
  - Nation's total resource use and pollution (some gaps)
  - Measures impacts from goods *consumed* (not *produced*)
    - i.e. Includes a lot of impacts that happen *elsewhere*
- **Environmental Performance Index**
  - Measures a country's environmental *outcomes* across 10 categories (air, water, habitat, CO2 etc)
    - i.e. Looks just at environmental performance *in that country*

➢ *Both ignore economic activity*

- i.e. how much wealth created per environmental impact

Environment-Economy Indices (2008-9)

Country	GDP	GCI	EPI	EF	EPI+CGI	(GDP+CGI) +(EPI+EF)
Switzerland	3	2	1	95	1	1
Sweden	12	4	2	96	2	2
Norway	1	15	3	106	4	3
Finland	15	6	4	98	3	4
Germany	16	7	13	84	6	5
Austria	7	14	6	94	5	6
Netherlands	5	8	55	85	24	7
France	17	16	10	93	9	8
United Kingdom	13	12	14	99	8	9
Japan	18	9	21	92	11	10
Canada	***8***	***10***	***12***	***107***	***7***	***11***
South Korea	24	13	51	81	26	12
Ireland	4	22	34	104	16	13
Belgium	14	19	57	97	30	14
United States	***2***	***1***	***39***	***112***	***13***	***15***
Malaysia	43	21	26	59	14	16
Denmark	11	3	25	110	10	17
Slovenia	22	42	15	87	17	18
Israel	23	23	49	91	28	19
Slovakia	30	46	17	73	23	20
Mexico	***40***	***60***	***47***	***75***	***42***	***44***

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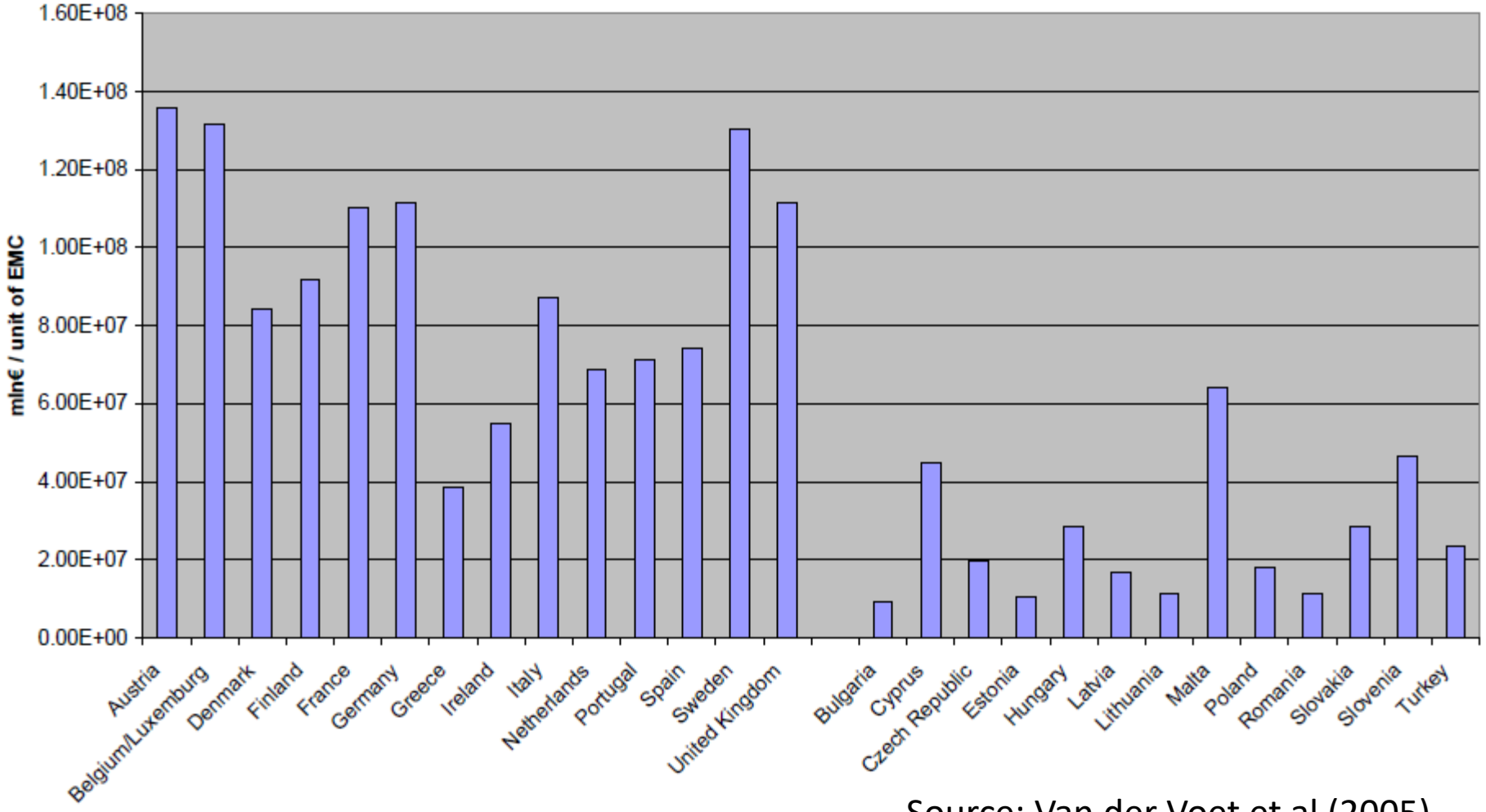
Source: Sustainable Prosperity (2010)

Possible Green Prosperity Metrics

- Blending all 4 may be best metric. Shows:
  - Current (GDP) and future (GCI) economic strength; domestic (EPI) and 'externalized' (EF) env't'l effects
- No perfect metric exists: a work-in-progress
- Alternative metric: *Natural Capital Productivity*
  - Environment/resource impact per unit economic output
  - Challenges: (a) Getting data; (b) Weighting different environmental impacts (e.g. GHG vs nuclear waste)

Natural Capital Productivity (EU)

($ produced per ton of environment/resource impact)



Source: Van der Voet et al (2005)

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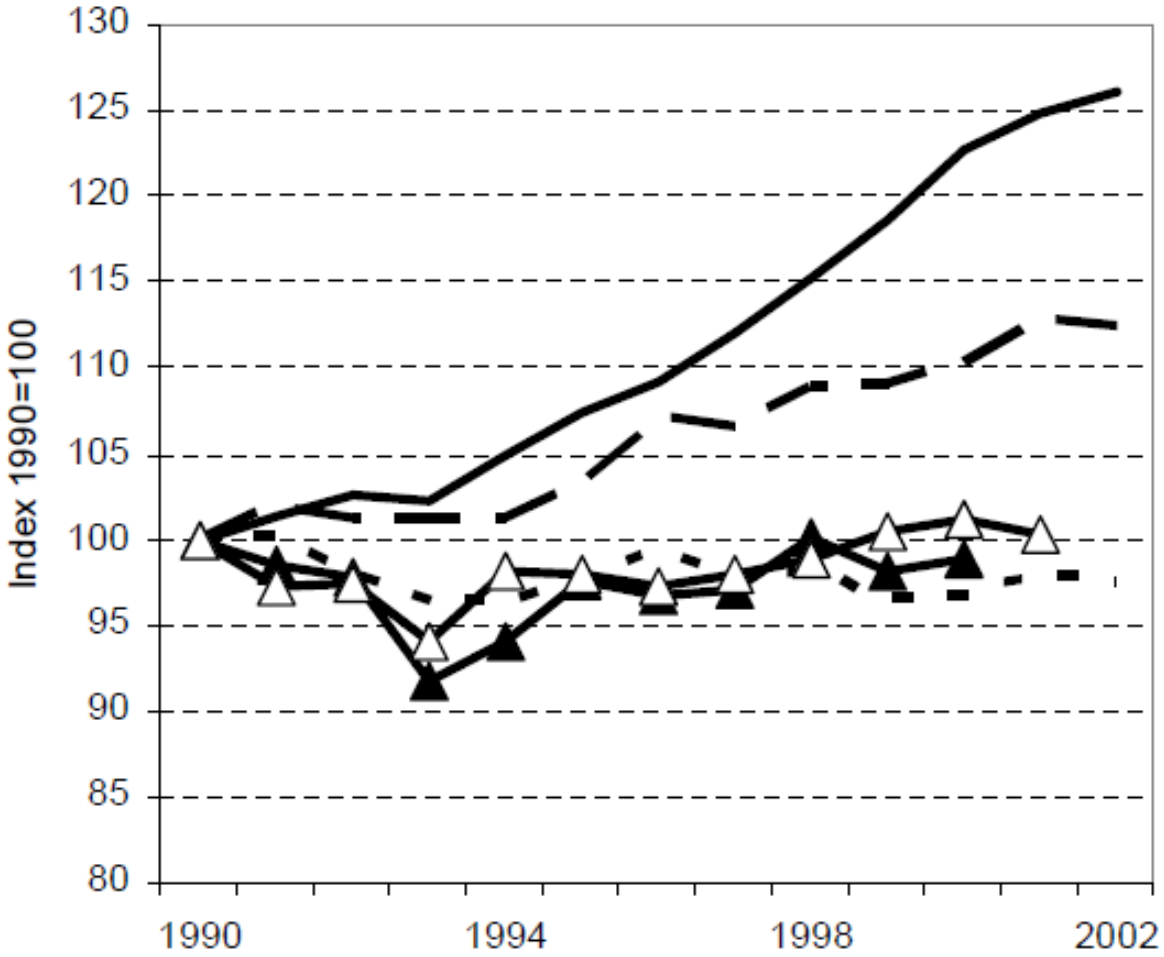
‘Decoupling’ Economic Growth and Environmental / Resource Impact (EU)



- Gross domestic product at market prices [Millions of euro (at 1995 prices and exchange rates)]
- Gross inland energy consumption [Thousands tons of oil equivalent (TOE)]
- Emission of greenhouse gases [Global warming potential, CO2 equivalent, 1000 tonnes]
- EMC (environmentally weighted material consumption) [Normalised (World 95) and equally weighted scores]
- DMC [1000 tonnes]

Comparing (Green) Apples to Apples

- All measure at *national, aggregated* level
  - But countries' economic structures differ
    - Favours countries with less natural resource or heavy manufacturing industry
  - **Does not compare apples to apples**

- Ideal approach: Compare eco-efficiency of *like sectors* across countries
  - natural capital productivity (*sector-based comparison*)
- None of these include *social and equity* factors
  - Could compare against Human Development Index

3. How to Get There:

Policies for Green Prosperity

- Goal: Pull **private investment** into greener products, processes, and services
- The KEY is putting a **price** on environmental costs & benefits
  - To correct "world's greatest market failure" (Stern)
- Information and voluntary efforts help, but usu. much smaller factor

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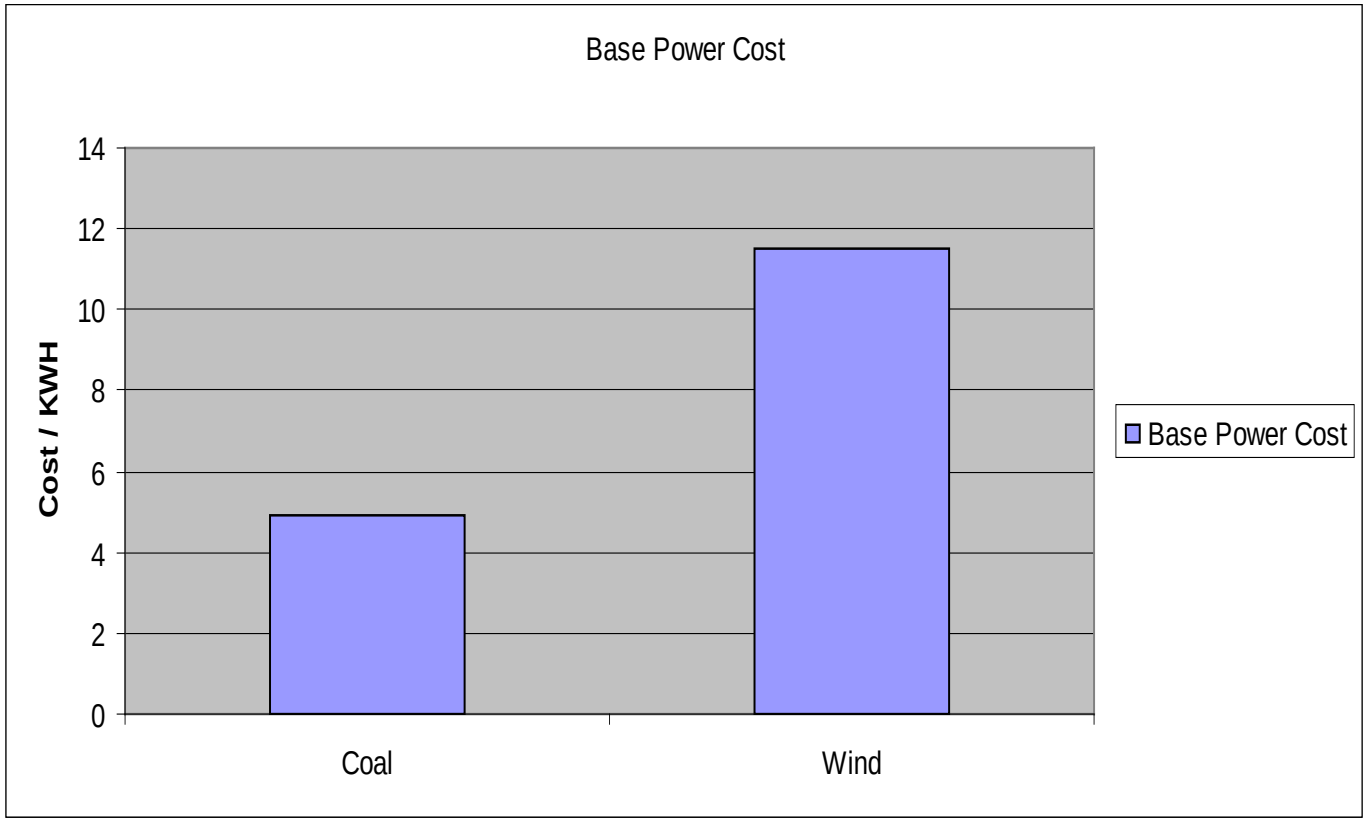
"Getting the Price Right"

*The **most important factor** in the effective pursuit of sustainable development is **'getting the price right'**.* Unless prices are assigned to air, water, and land resources that presently serve as cost-free receptacles for the waste products of society, resources will tend to be used inefficiently and environmental pollution will increase.

- World Business Council on Sustainable Development

Coal vs Wind Power Price

Current Base Costs



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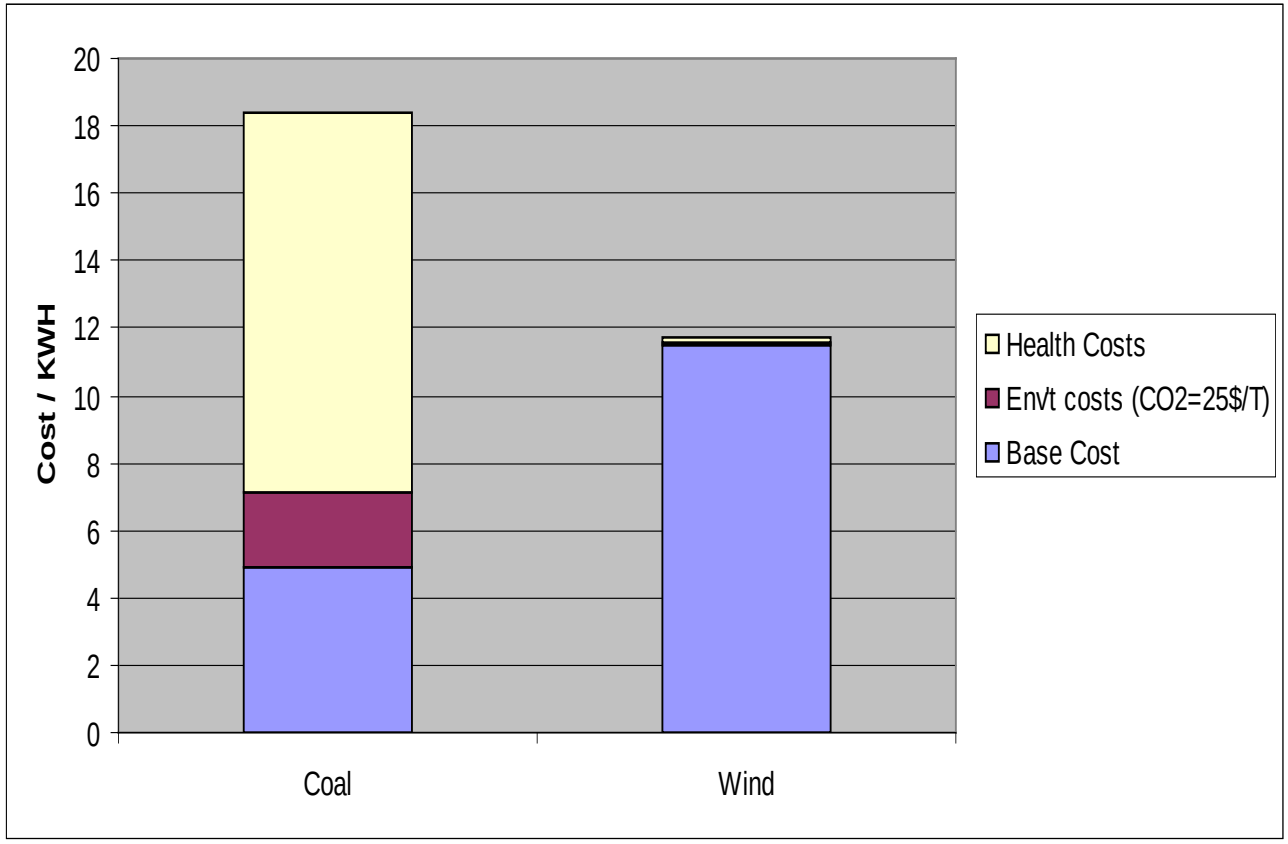
Coal vs Wind Power Price

with Env't and Health Costs



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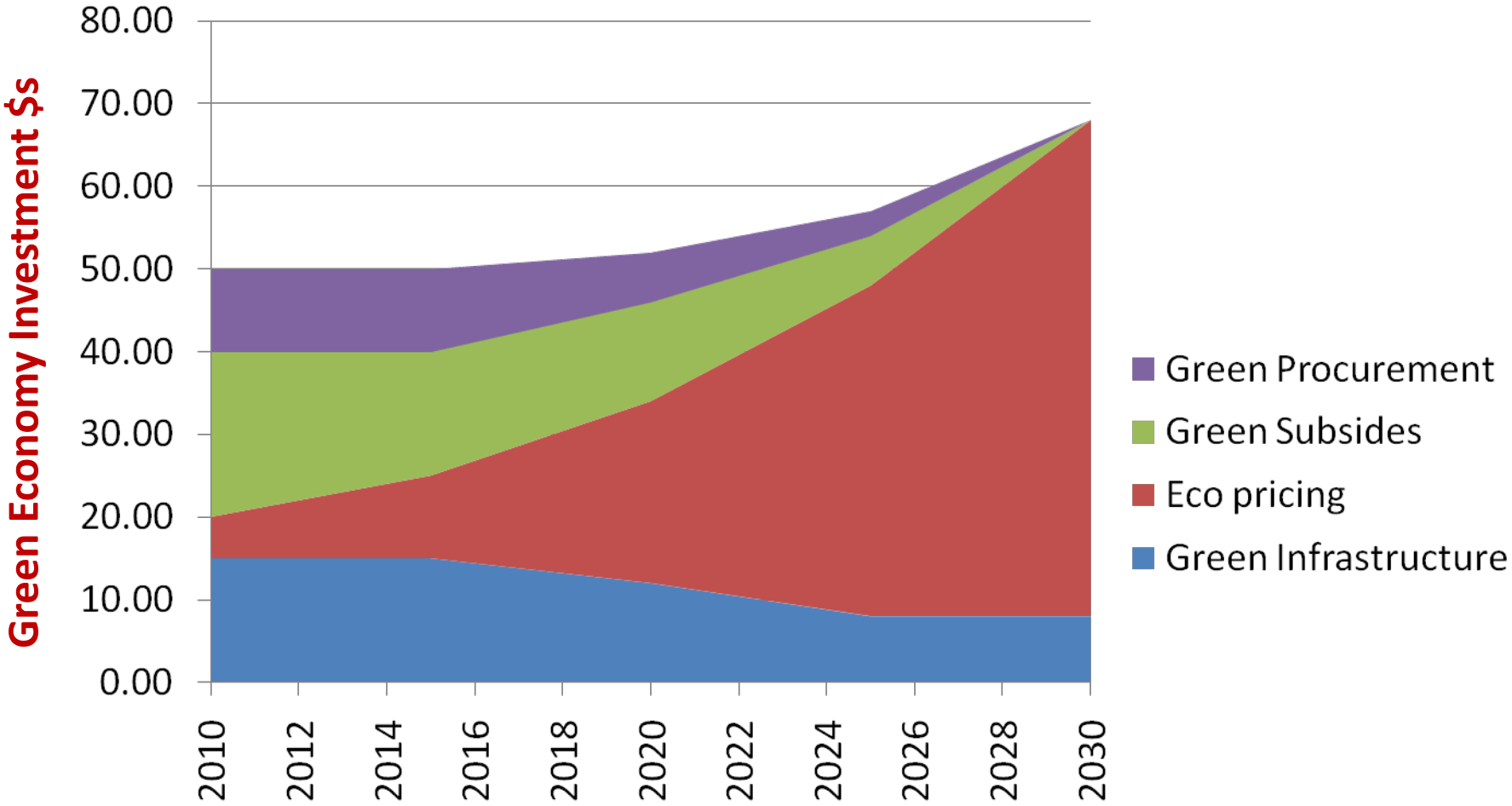
Policy Mix for Green Econ. Transition

- Pricing Env't / Resources) Ramp-*up*.
  - Green taxes, emission trading) Pull in private $s
- Government subsidies
  - Eliminate 'bad' subsidies) Transitional.
  - Green subsidies / incentives) (Price surrogate)
  - Green investments / loans) Ramp *down* as
  - Green procurement) price ramps up,
  - Regulate (renew. portfolio)) private $s grow.
- Green Infrastructure, R & D) Ongoing
- Policy stability is KEY (for investment)

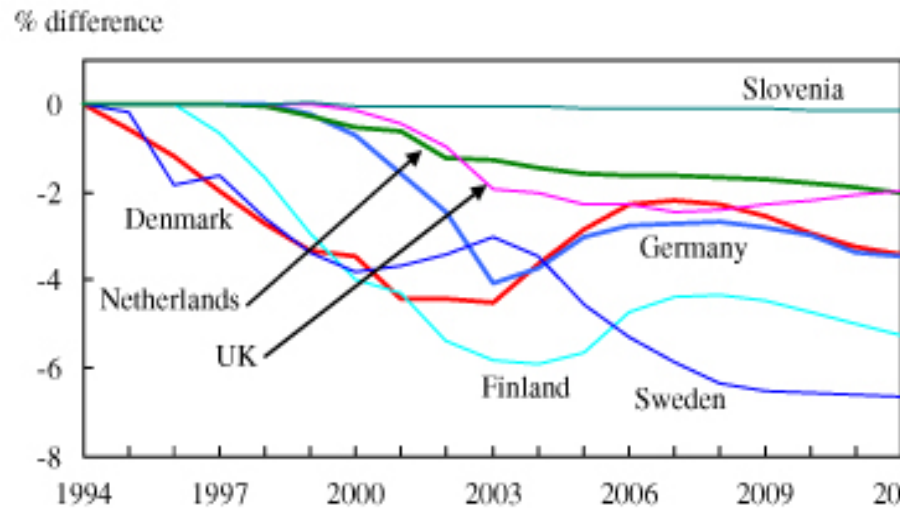
Policies for Green Econ. Transition



Environmental Pricing *can Work*

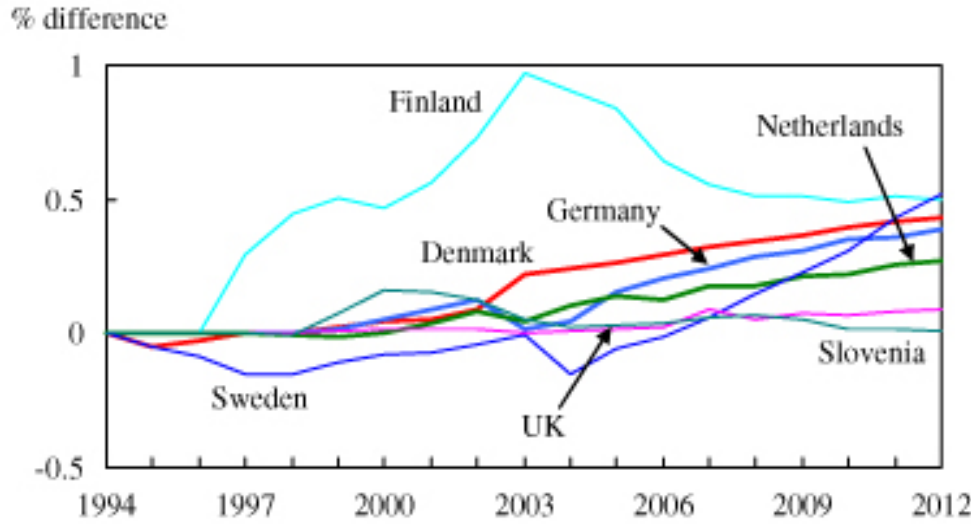
- EU Experience (Tax Shifting)-

CHART 2: THE EFFECT OF ETR ON GHG EMISSIONS



Note(s) : % difference is the difference between the base case and the counterfactual reference case.
Source(s) : CE.

CHART 3: THE EFFECT OF ETR ON GDP



Note(s) : % difference is the difference between the base case and the counterfactual reference case.
Source(s) : CE.

Source: COMETR study (2007)

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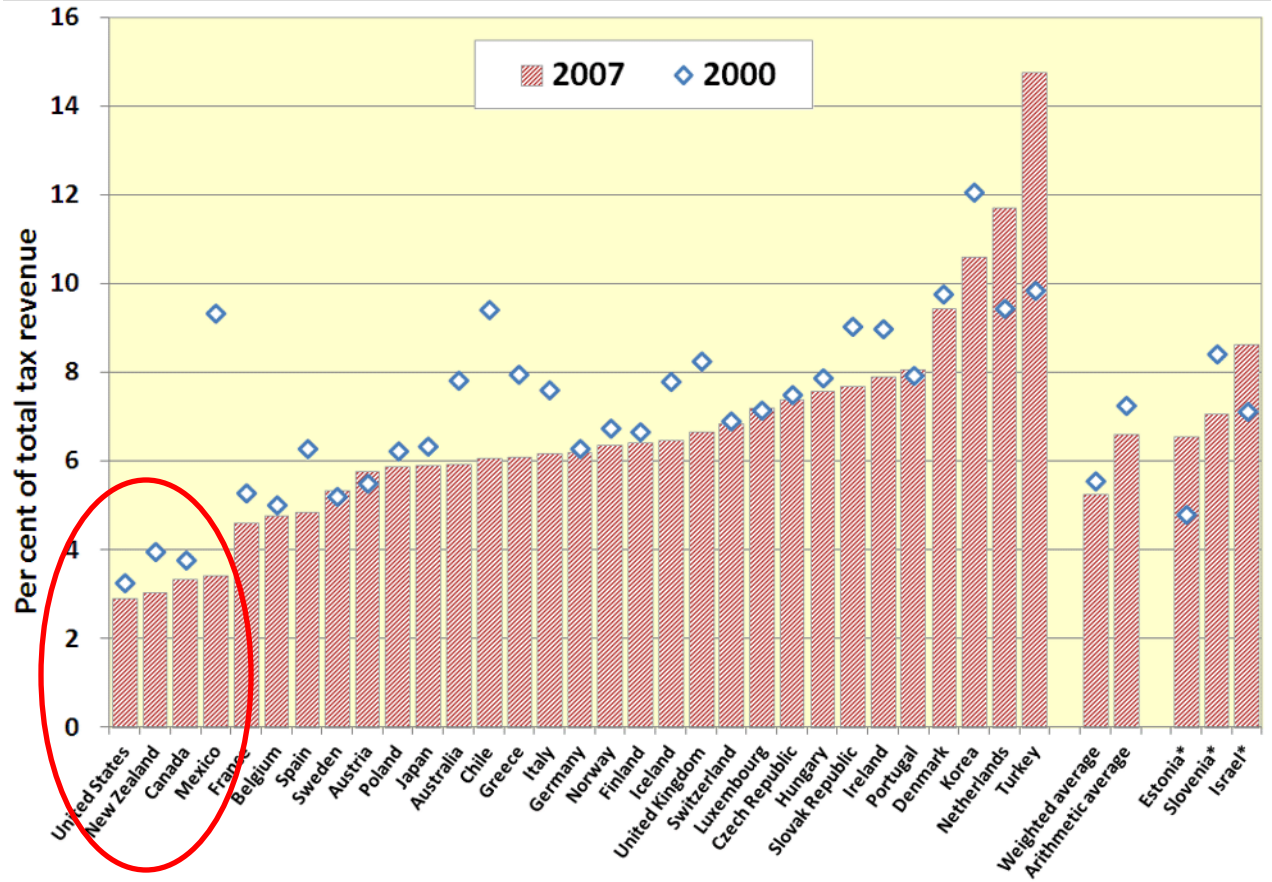
Use of Green Taxes and Fees

Revenues from environmental taxes / fees
per cent of total tax revenue (OECD)



Use of Green Taxes (vs. OECD peers)

Country	Rank
Mexico	28
Canada	29
United States	31

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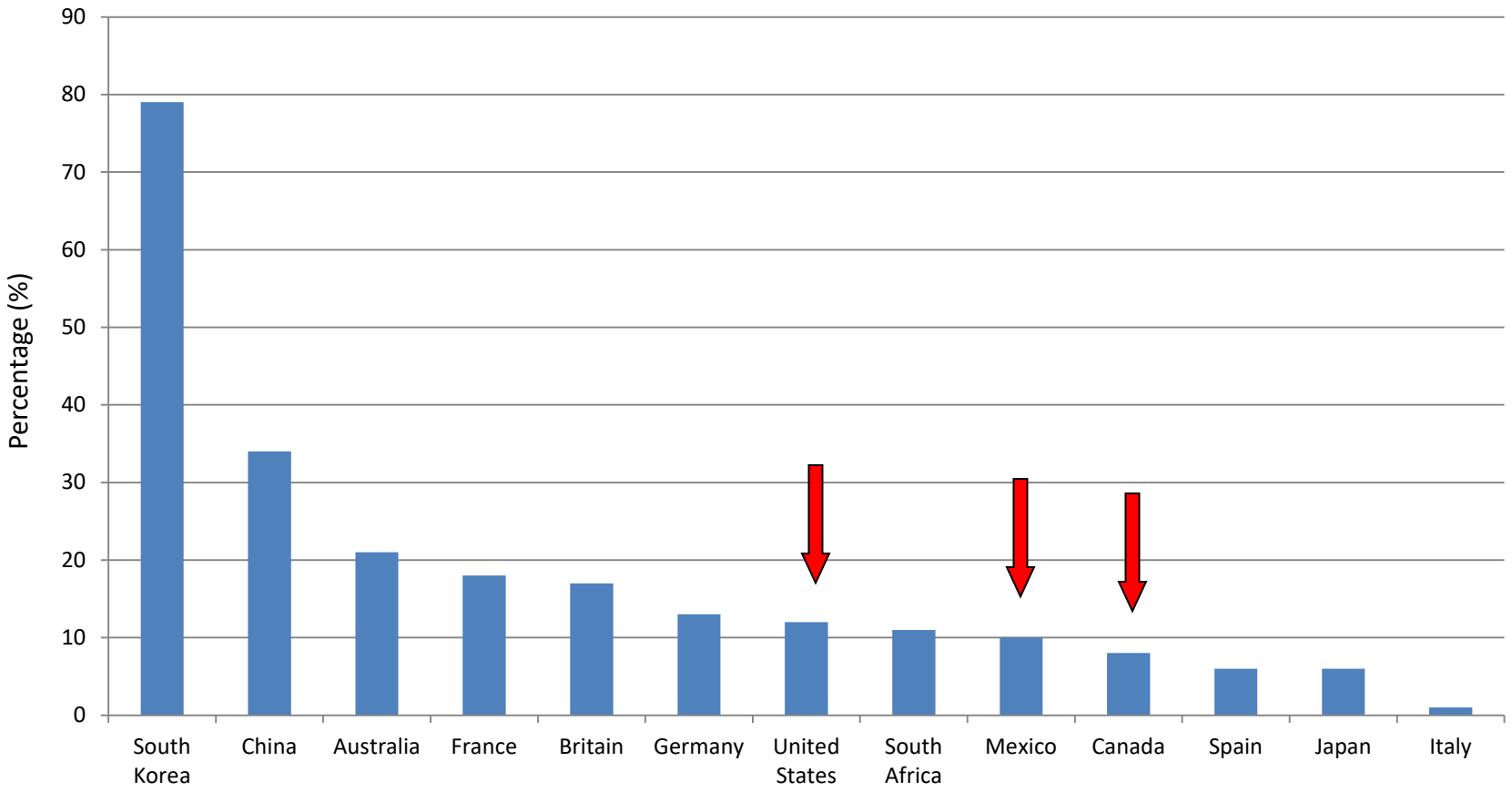
Percentage of stimulus $s dedicated to green spending



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4. What Can the CEC Do? *Options..*

- **Report on Green Prosperity performance** of NAFTA countries (benchmarked globally)
- *Which metric?*
  - 4 factor blend (data is there)
  - NC productivity (add N.A. into EU analysis)
- *Sector-specific?*
  - Maybe pick *certain sectors* for case studies (e.g. auto, paper, oil, agriculture) [stage 2?]

➢ Identify key *factors/variables* for 'greening economy' [stage 2?]


North America could build a
stronger, greener economy,
if the right incentives
are put in place.

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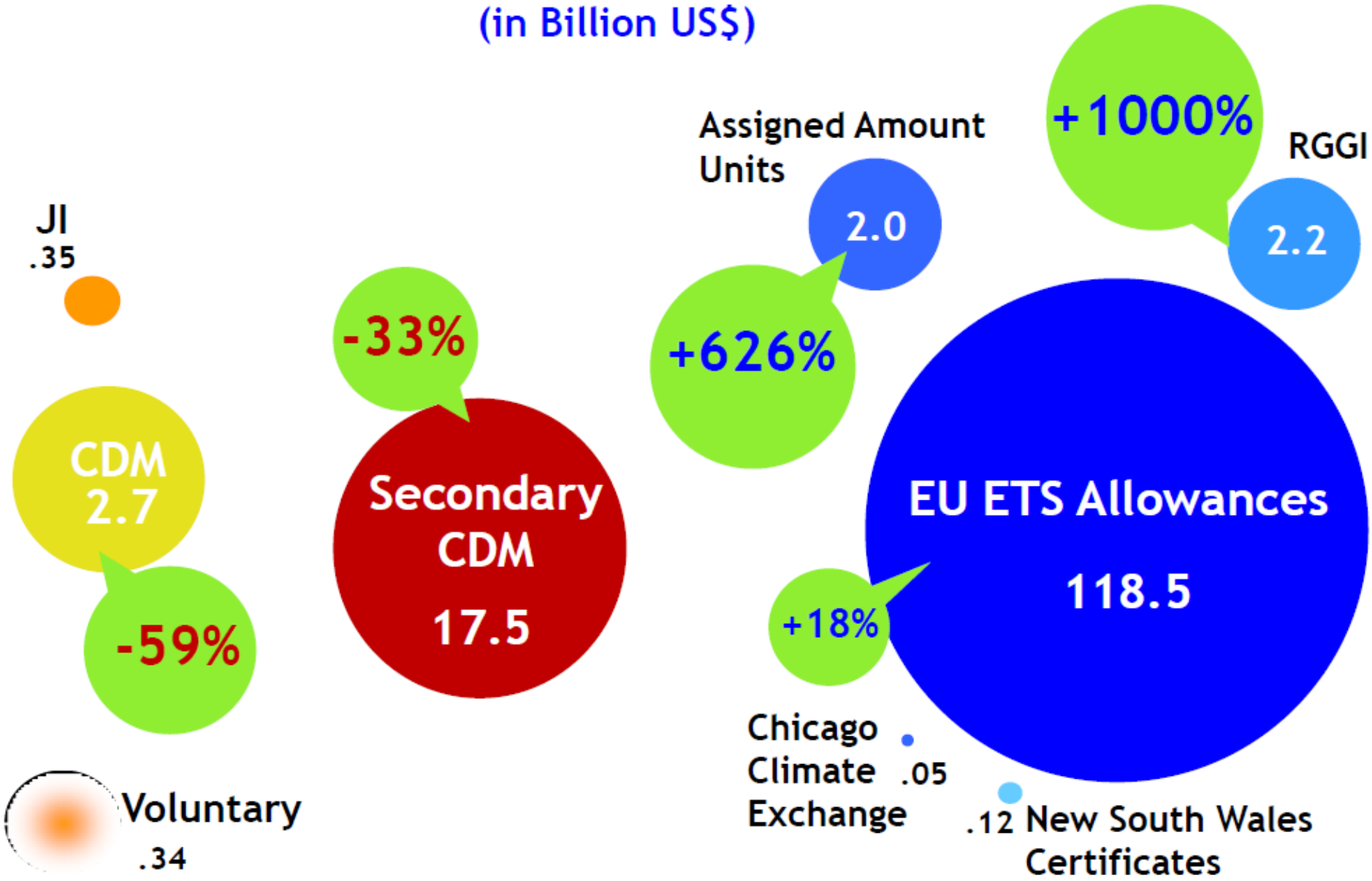
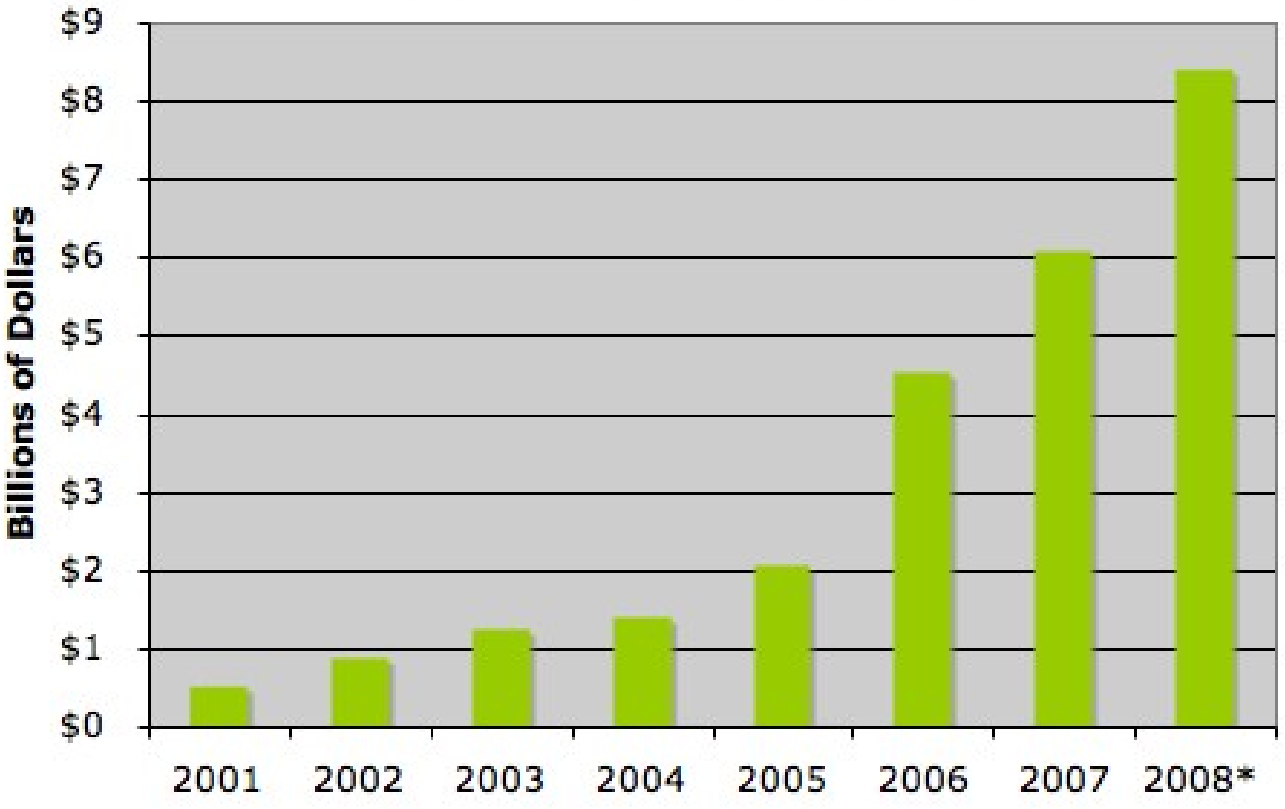
Or is it …?

- *Growth in market share of "green" sectors or products?*
- This focuses more on *what* you make (green stuff) vs. *how* you make it (low impact)
- Problem: Hard to define what is 'green' sector or product
  - e.g. recycled steel, clean coal power, hi-mileage truck, etc?

Reg. vs Voluntary: Carbon Market ('09)



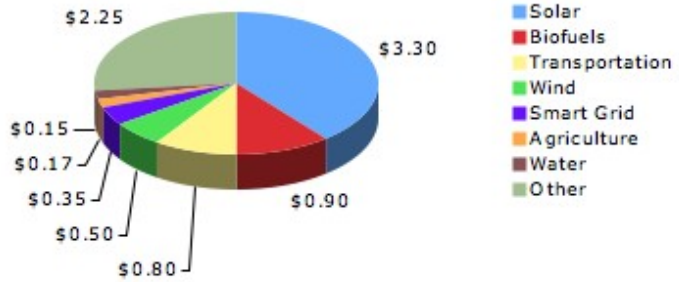
Cleantech VC Investments



* Numbers for 2008 are preliminary

Top Cleantech-Investment Categories

• Numbers are in billions of dollars



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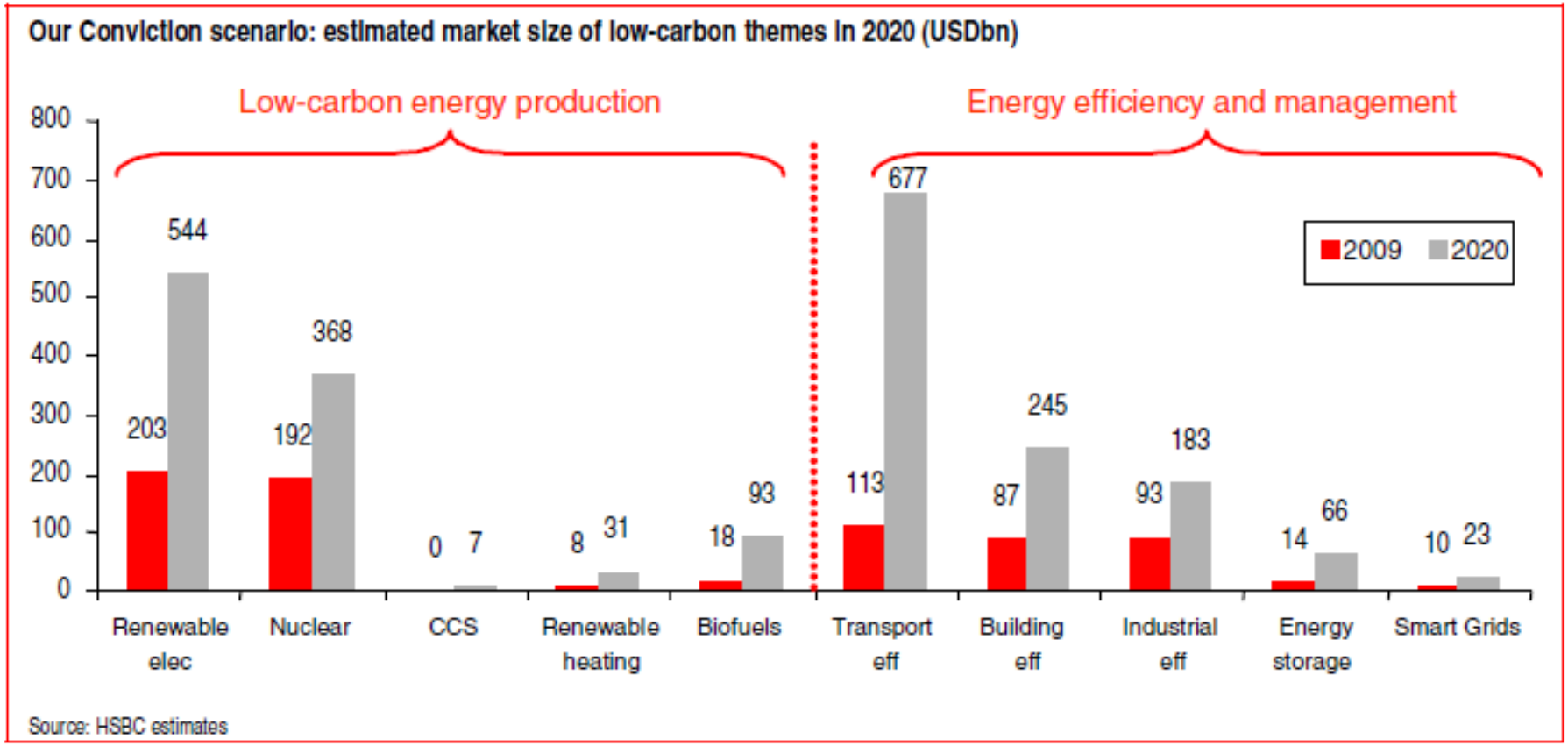
Low-Carbon Energy Markets



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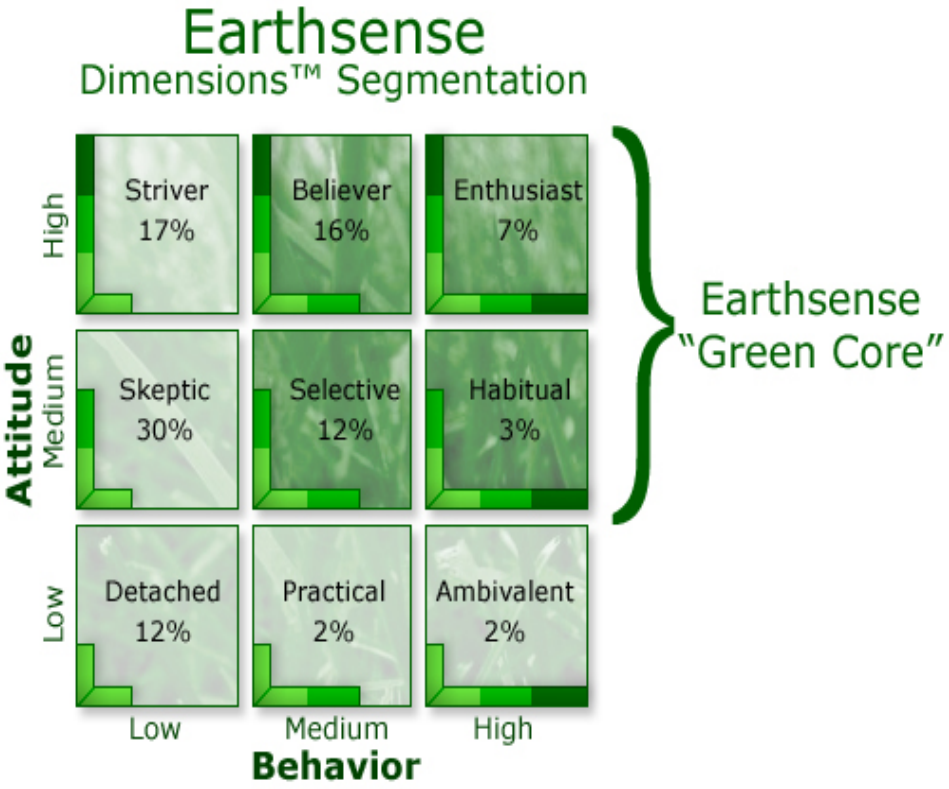
Change?

“Green “ consumers?



“Green “ supply chains?

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