

# ***The Green Supply Chain***

***– a marketing tool for today's economy***



# Corporate Sustainability



- ❑ **Strategy:** Integrating long-term economic, environmental and social aspects in their business strategies while maintaining global competitiveness and brand reputation.
- ❑ **Financial:** Meeting shareholders' demands for sound financial returns, long-term economic growth, open communication and transparent financial accounting.
- ❑ **Customer & Product:** Fostering loyalty by investing in customer relationship management and product and service innovation focusing on technologies and systems, using financial, natural and social resources in an efficient, effective and economic manner over the long-term.
- ❑ **Governance and Stakeholder:** Setting the highest standards of corporate governance and stakeholder engagement, including corporate codes of conduct and public reporting.
- ❑ **Human:** Managing human resources to maintain workforce capabilities and employee satisfaction through best-in-class organizational learning and knowledge management practices, remuneration and benefit programs.

*Source: Dow Jones Sustainability Index*

# Chief Sustainability Officers: increasing influence

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- ❑ Used to be environment watchdogs, responsible for safety / regulation
- ❑ What started as a compliance job has evolved into:
  - guarding the brand and image
  - partner suppliers and customers to develop green products
  - decisively influence product research and advertising
- ❑ CSOs come from a diversity of backgrounds
  - Owens Corning: research  
(ensures R&D is heavily linked to renewable products)
  - Home Depot: merchandising  
(ensuring what is on sale comes from a green supply chain)
  - GE has 2 CSOs, one for ecomagination, one for compliance
  - HSBC headhunted from the WWF  
(ensuring the brand is associated with sustainability)
  - Hilton Hotels: branding background  
(reducing carbon footprint for 3'000 hotels)



# A compelling business case:

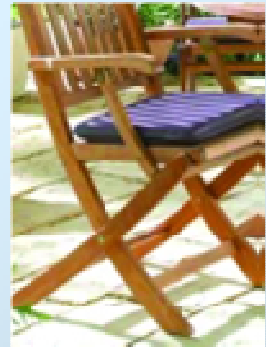
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- ❑ All businesses rely on their supply chains to:
  - survive and grow
  - develop a competitive edge
- ❑ Modern manufacturing has driven down the time and cost of the production process, leaving supply chains as the final frontier for cost reduction and competitive advantage
- ❑ If your company touches a physical product, it's part of a supply chain - success or failure ultimately hangs on weakest link
- ❑ Over the years, supply chains have become:
  - deeper
  - branched
  - seamless between internal and external elements
  - global
  - characterized by complex and costly databases
  - working capital intensive



# What does “Green” mean to the consumer?

- Changing to environmentally friendly products
- Using products which have minimal impact on the world’s resources
- Let the polar bears live
- Using environmentally safe or re-cycled products
- Making changes to your living and buying habits to protect the environment
- Buying things:
  - in packages that will de-compose quickly
  - solvents and cleaners that do not poison the groundwater
  - totally electric cars / trucks that do 50 miles to the gallon
- Using less chemicals
- Switching to green products



# Investors' Green Business Landscape in 2050

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## ❑ WINNERS

- Manufacturers of battery-powered cars (EVs)
- Renewable energy companies
- Nuclear power generators
- Investors in emission-reduction projects in developing countries
- Energy generators incorporating carbon capture technology
- Energy-efficient companies in energy-intensive countries



## ❑ LOSERS

- Fossil fuel-based transport industry (e.g., cars, trucks)
- Oil producers
- Coal producers
- Traditional coal-fired power stations
- Energy intensive industries (e.g., steel, cement)
- Consumers with high energy use in developed countries
- Manufacturing and construction companies producing energy-inefficient products and buildings



Source: Financial Times, Oct 2009

# Truly Green Supply Chains are rare...



Source: Patrick Penfield, 2007

# Consumers: green adopters...or adaptors?



*Selected U.S consumer behavior changes which could be considered environmentally friendly, 2008-2009*

	%
<input type="checkbox"/> Turning off more lights / appliances when not in use	45
<input type="checkbox"/> Waiting to replace things until really necessary	39
<input type="checkbox"/> Turning the heat down at home to save fuel	38
<input type="checkbox"/> Re-cycling	31
<input type="checkbox"/> Fixing things instead of replacing them	31
<input type="checkbox"/> Buying energy efficient products	30
<input type="checkbox"/> Reducing the amount of driving	30
<input type="checkbox"/> Buying healthy food	21
<input type="checkbox"/> Reducing the amount of traveling to work	12
<input type="checkbox"/> Buying products with high animal welfare standards	7
<input type="checkbox"/> Buying ethnically sourced products	7
<input type="checkbox"/> Buying Fair-Trade products	1

*Source: J. Walter Thompson (JWT Anxiety Index)*

# Newsweek green corporate rankings (S&P 500)

## Top 20 overall

1.	HP	Technology
2.	Dell	Technology
3.	J&J	Pharma
4.	Intel	Technology
5.	IBM	Technology
6.	State Street	Finance
7.	Nike	Consumer
8.	BMS	Pharma
9.	Applied Materials	Technology
10.	Starbucks	Food /Bev.
11.	Johnson Controls	Industrial
12.	Cisco Systems	Technology
13.	Wells Fargo	Finance
14.	Sun Microsystems	Technology
15.	Sprint Nextel	Technology
16.	Adobe Systems	Technology
17.	Advanced Micro Devices	Technology
18.	Kohl's	Retail
19.	Allergan	Pharma
20.	Staples	Retail

## Top 20 Pharma / Healthcare

1.	J&J	(3)
2.	BMS	(8)
3.	Allergan	(19)
4.	Baxter	(35)
5.	Pfizer	(54)
6.	Hospira	(62)
7.	Medtronic	(64)
8.	Becton Dickinson	(83)
9.	Abbott Laboratories	(88)
10.	Wyeth (Pfizer)	(102)
11.	Life Technologies	(107)
12.	Eli Lilly	(123)
13.	Jacobs Engineering	(145)
14.	Genzyme	(147)
15.	Merck	(163)
16.	Schering Plough	(218)
17.	Biogen	(220)
18.	United Health	(253)
19.	Quest Diagnostics	(266)
20.	Amgen	(342)



# Three levels of challenge facing Pharma

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## ❑ **Structural:**

- changing healthcare systems
- the continued dominance of the US market
- the rise of Generic competition
- the emergence of new generation products;
- deteriorating drug prices worldwide

## ❑ **Internal:**

- the cost and length of R&D combined with declining R&D productivity;
- the governance of 'Enormous' Pharma;
- R&D spend vs. Sales & Marketing spend (companies locked in 'arms race' competing in the size of their sales forces)

## ❑ **Reputational:**

- 'do Pharma companies have patient interests at heart?'
- the need to reconcile profit with public health;
- criticism over the safety of clinical trials and drug withdrawals
- development of lifestyle over life-saving drugs,
- use of marketing techniques,
- access to medicines in both developed and developing countries.



*Source: Robert Barrington, F&C Management Ltd*

# Sustainability at Roche

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- ❑ Three elements of sustainability: society, environment and economy – are interdependent
  
- ❑ Balancing these elements in managing the business:
  - Managing our business responsibly, with high levels of corporate governance
  - Growing our business sustainably and creating high-quality, rewarding employment
  - Ensuring access to products for those who need them
  - Valuing employees and protecting their safety
  - Reducing the environmental impacts and costs of both our products and our operations
  - Supporting communities through local initiatives and by encouraging innovation in science and the arts



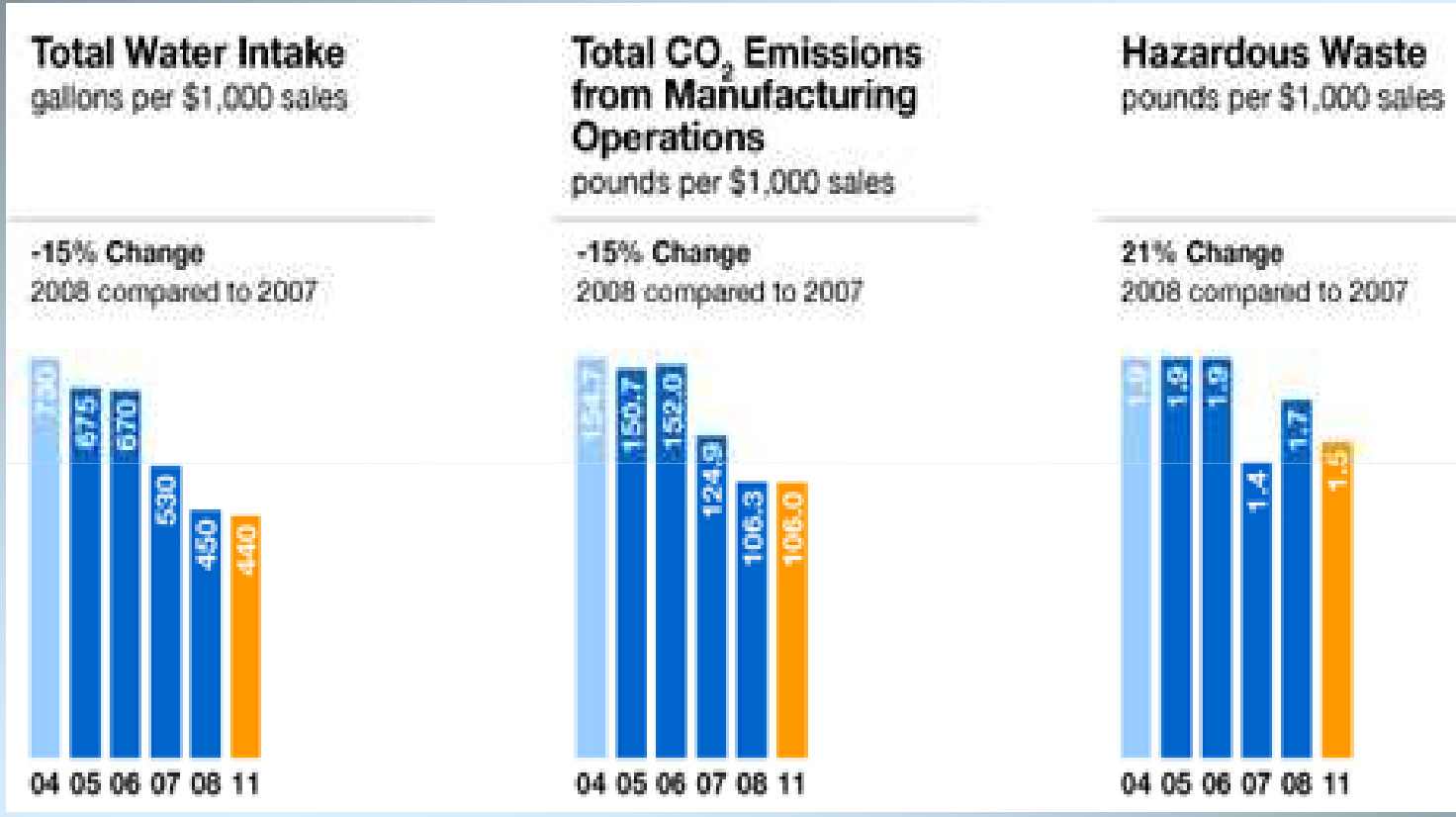
# Abbott launches 40 sustainable packaging initiatives

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- ❑ Aimed at 5% reduction target in amount of packaging used in key products by 2013
- ❑ Eliminated est.1310 tons (2.88 million lbs) of packaging on annual basis through reduction initiatives on few select products since 2007
  - ▶ equivalent to preventing 6‘800kg (15,000 lbs) of polystyrene foam into landfills
- ❑ 15% reduction of plastic in infant formula containers in 2008
- ❑ Case study:  
*Abbott Nutrition reduced the amount of plastic in its 8 ounce re-closable bottles by 8.3 percent, cutting polypropylene plastic usage by 1220 tons (2.7 million lbs) annually. The lighter bottles also will help save an annual 1.7 million liters (436,000 US gallons) of gasoline used in transportation.*



# Abbott cut CO2 emissions, water use by 15% in 2008



# Hewlett Packard's supply chain

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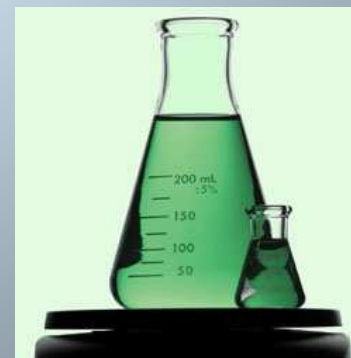
- ❑ The most extensive in the global IT industry
- ❑ Operates in 170 countries
- ❑ Over 600 “Tier 1” suppliers in materials and CEM supply, of which 103 major suppliers represent 95% of worldwide procurement
- ❑ T1 suppliers responsible for producing on a daily shipment basis:
  - 1.3 million print cartridges
  - 110'000 printers
  - 75'000 PC systems
  - 3'500 servers
- ❑ HP has been operating a Design for Environment (DfE) program since 1992. The three major elements are:
  - *Energy efficiency*: both in manufacturing and product usage
  - *Materials Innovation*: reducing use and environmental impact
  - *Design for recyclability*: easier upgraded or re-cycled



# The trend towards green chemistry

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- ❑ Sustainability metrics are routinely used to compare alternative process routes (e.g., Sheldon's E-factor)
- ❑ The key role of solvents:
  - comprise the largest part of the waste produced in pharmaceutical manufacture
  - extensive recycling and reuse of solvents is undertaken to minimize resource consumption.
  - un-reusable or further recyclable solvents are incinerated in energy recoverable installations



# 12 Principles of Green Chemistry

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- ❑ **Prevent waste:** design synthesis so no waste is left to treat or clean up
- ❑ **Design safer chemicals and products:** to be effective, minimize toxicity
- ❑ **Design less hazardous chemical syntheses:** environmentally safe
- ❑ **Sustainable feedstock basis:** Use renewable (agricultural), not depleting (fossil)
- ❑ **Use catalysts, not stoichiometric reagents:** multiple single reactions
- ❑ **Avoid chemical derivatives** which use waste generating reagents
- ❑ **Maximize atom economy:** Design syntheses to minimize wasted atoms
- ❑ **Use safe solvents & reaction conditions:** Avoid solvents & separation agents
- ❑ **Increase energy efficiency:** Run reactions at ambient temp, pressure
- ❑ **Design-in bio-degradability:** break down to innocuous substances after use
- ❑ **Avoid by-products:** analyze using in-process real-time monitoring & control
- ❑ **Health & safety:** design chemicals and their forms (solid, liquid, or gas) to minimize risk (explosions, fires, and releases to environment).

*Source: Anastas & Warner: Green Chemistry: Theory and Practice, 1998*

# “Green” chemical supply chains – manufacturer issues

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- ❑ Obtaining chemical information from suppliers remains a challenge
- ❑ The provision of web-based portals for chemical data entry has facilitated data entry
- ❑ Training of suppliers has become a major activity to ensure correct data collection
- ❑ Collecting data on chemicals that are of emerging concern is valuable and may be prevent future environmental problems
- ❑ Overall, materials procurement has become much more complex and sophisticated, with respect to:
  - supplier selection
  - contractual aspects
  - customer – supplier relationships
- ❑ The existing patchwork of global regulatory chemical systems is:
  - inefficient from a co-ordination standpoint
  - hinders the development of a global environmental concept



# Complex supply chains: advancing safer chemistry

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- ❑ Consumer companies need information from chemical supply chains:
  - environmental health & safety
  - green consumerism
  - regulatory compliance (REACH, RoHS, Proposition 65, etc.)
  - participation in green certification programs
  - disclosure of chemical ingredients in products
- ❑ Manufacturers are developing new programs to “green” their products, including:
  - the proactive reduction / elimination of toxic chemicals
  - substitution of toxic components with safer alternatives
  - restricting chemical content in products
- ❑ This increases the need for complex *chemical information*, including:
  - specific identity of specific chemicals or ingredients
  - concentrations, reactive by-products, hazardous / toxic profiles
  - potential for human and environmental exposure



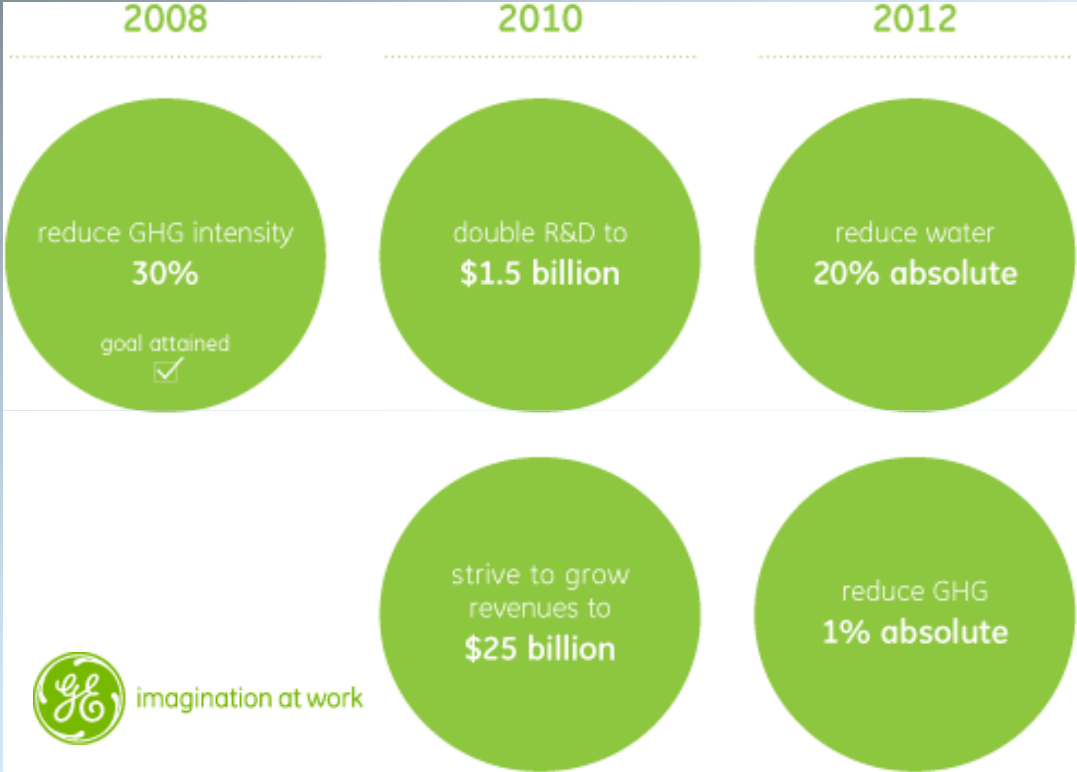
# “Green” chemical supply chains – supplier issues

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- ❑ T1 Suppliers may not have information requested as T2 or below suppliers are unwilling / unable to comply
- ❑ Suppliers, may not have capability, infrastructure or resources to develop information
- ❑ Suppliers may be unwilling to disclose information:
  - for competitive reasons
  - which is confidential for legal and intellectual property reasons (patents, business processes, prior confidentiality agreements)
  - for fear of potential product and legal liability
- ❑ Differences in culture, language, values, legal requirements may make suppliers unable or reluctant to disclose information



# GE's ecomagination<sup>™</sup> targets



# Energy needs for a green industrial revolution

What the world has to build each year to halve carbon emissions by 2050 and limit warming to 2°C

GW per year 2010-50 ■ Present rate ■ Ideal 2050 scenario



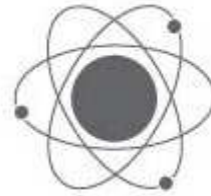
**Wind - onshore**  
**2,900-14,000**  
wind turbines



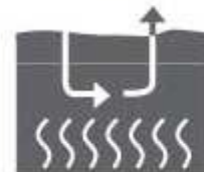
**Gas-fired with CCS\***  
**1-20**  
CCS gas-fired plants (500MW)



**Wind - offshore**  
**775-3,750**  
wind turbines (4MW)



**Nuclear**  
**24-32**  
nuclear plants



**Geothermal**  
**50-130**  
geothermal units (100MW) plants



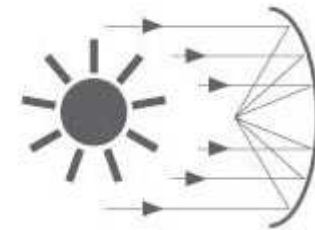
**Hydro**  
**1/5**  
of Canada's hydropower capacity



**Solar panels**  
**115-215**  
million m<sup>2</sup> solar panels



**Biomass**  
**30-100**  
biomass plants (50MW)



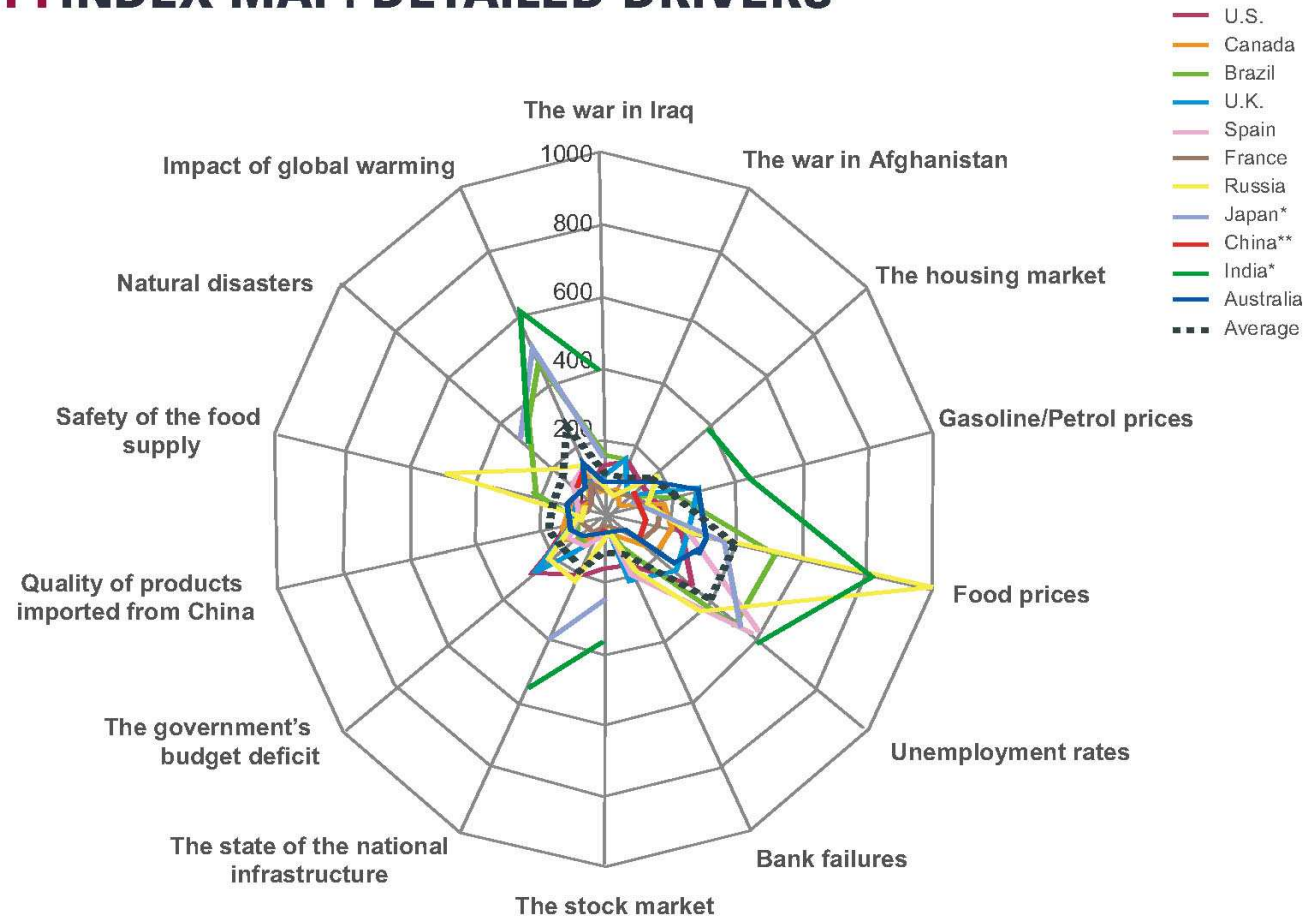
**Solar CSP\*\***  
**45-80**  
CSP plants (250MW)



\*Carbon capture and storage \*\*Concentrated solar power using sun on mirrors to heat water and drive steam turbines

Source: Energy Technology Perspective

# ANXIETY INDEX MAP: DETAILED DRIVERS



AnxietyIndex: % who are nervous or anxious/% who are not

\*Bank failures, government's budget deficit, safety of food supply and the war in Afghanistan not measured in Japan or India.  
 \*\*Bank failures, government's budget deficit, quality of products imported from China, safety of food supply, the war in Iraq and the war in Afghanistan not measured in China.

# Early adopters

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- ❑ Consumers who are the earliest within a market to adopt an innovation or new technology
- ❑ Main motivation is to differentiate themselves from the rest of their operating environment
- ❑ Industrial markets:
  - early adopters are risk takers
  - may be part of their own marketing image
  - often require some sort of exclusivity
  - often require an acquisition strategy
- ❑ Consumer markets: feel that they are missing something that can only be fulfilled by early adoption of innovative technology – often fashion conscious



# Green marketing in a recession

- ❑ Strict supervision of marketing costs
- ❑ Liquidity creates optimality
- ❑ Detect and exploit weakened competition
- ❑ Ensure offering is mainstream, not exotic
- ❑ Listen to firm's stakeholders and other market data
- ❑ Get product into as many customers' hands as quickly as possible
- ❑ Select market applications which are less recession prone
  - healthcare
  - life science
  - food
  - government: defense, infrastructure, utilities



# Marketing tactics which go a long way

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- ❑ Set clear goals, objectives, tactics – and strategies on how to reach them
- ❑ Competitive behavior – take the best and leave the worst
- ❑ Focus spending and own your chosen communication channel
- ❑ Create effective selling tools for many marketing situations
- ❑ In engineer to engineer marketing, use quantitative data - *figures*
- ❑ *“Fish where the fish are biting”*
- ❑ Try the unusual
- ❑ Look and act bigger than you are
- ❑ Exploit the *bush telegraph*
- ❑ Free media is always available. Seek and you shall receive.



# Marketing Supply Chains

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- ❑ Obtain product certification
- ❑ Include product in green procurement systems, search machines
- ❑ Appropriately label the product
- ❑ Emphasize direct benefits of products
  - health
  - use and sustainability of materials used
  - true ownership cost (energy utilization, disposal, maintenance)
  - give consumers information based on validated claims
- ❑ Differences in culture, language, values, legal requirements may make suppliers unable or reluctant to disclose information.



# Green is controversial

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- Trendy, a fashion
- Expensive
- Opportunistic
- Certification wars (e.g. best sustainable forestry label)
- Politically motivated (protectionist, socialist, against Big Business)
- Clever marketing in a recession
  - re-aligns relative market share
  - sells unsophisticated products at high prices
  - self regulatory: *industry associations issue own certifications*
- Procurement tactic to optimize supplier knowledge
- Primary value proposition masks non-green sub-supply
- Delegates down the chain:
  - supplier management (from Tier 2-N)
  - working capital
  - just in time – *déjà vu*



# Climate change according to Michael O'Leary

- ❑ Proud to run Ryanair, “Europe’s greenest airline”
  - most modern aircraft, claims lowest emissions
  - highest payloads (most passengers per flight)
  - uses existing small airfields thereby easing congestion
  - surcharges passengers (excess baggage, paper tickets, etc)



According to Michael:

“The guilt-ridden middle classes chatter on about the environment as they drive their SUVs to the supermarket to buy kiwi fruits flown halfway around the world. Why don’t they eat British turnips all winter if they want to save flights? There is no link between aviation and climate change.”

“Human breathing is one of the biggest problems as far as I can see. Why don’t environmentalists just shoot all the humans?”

“I am far too busy doubling Ryanair to be joining any carbon emissions trading scheme.”



# (1) Perception: which is greener?

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64% surveyed correctly said aircraft...

## Cruise Ships

- emit three times more *carbon*
- expend massive amounts of *energy and waste* to keep travelers fed and entertained
- electricity used* on laundry, restaurants, and nightly entertainment is enormous
- the trash factor*: the average ship creates up to 10 pounds of trash per person each day



## (2) Perception: which is greener?

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69% surveyed correctly said the gas stove...

### Gas stoves

- ❑ creates its own heat by burning natural gas delivered through municipal pipes



### Electric stoves

- ❑ typically rely on energy generated hundreds of miles away
  - by a fossil fuel based plant
  - delivered by inefficient investment-starved national grids



### (3) Perception: which is greener?

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67% surveyed correctly said industrial farm chickens...

#### Free range chickens

- Doesn't necessarily mean free roaming (*based on USDA definition*)
- Just reared in larger cages



#### Industrially farmed chickens

- Take up less space
- Consume less energy



# Green Supply Chains – today's status

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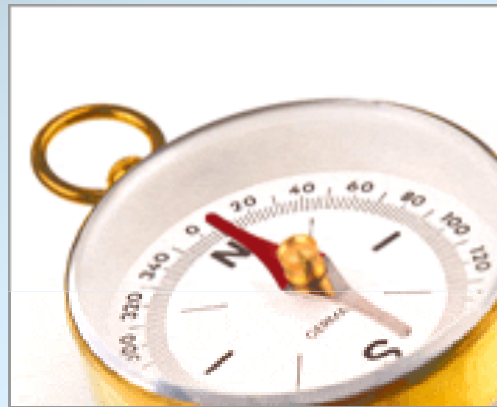
- ❑ Small steps can have a significant impact
- ❑ Environmental
  - what you decide to buy
  - from whom you decide to buy
  - need not be a resource intensive challenge
- ❑ To the business
  - Momentum of the virtuous circle
  - PR benefit of seizing the moral high ground
  - Increased efficiency leads to bottom line improvements
  - Customers start citing environmental criteria in RFQs



# Thanks for your attention...

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□ Any questions?



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