

Rod Oram's presentation to
Natural Products New Zealand's Summit
Nelson, April 22nd, 2010



Twirl the World

Global crises...

...New Zealand's opportunities

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Agenda

- Crises
- Shifts
- Threat
- Opportunity
- New Zealand will...
- ...twirl the world

1. People

- The world's human population will quadruple in my lifetime
 - ...to 10bn people in 2050

The graph illustrates the historical and projected growth of the world's human population. The vertical axis represents population in billions, ranging from 0 to 12. The horizontal axis represents time in years, from 10 million years ago to 5000 A.D. The population remains near zero until around 10,000 years ago, when it begins to rise. Key historical periods are marked: Old Stone Age, New Stone Age, Bronze Age, Iron Age, and Modern Ages. A sharp increase is projected for the future, reaching 10 billion by 2050. The 'Black Death — The Plague' is noted as a significant event around 1350 A.D. The 'Future' section shows a rapid increase in population, reaching 10 billion by 2050.

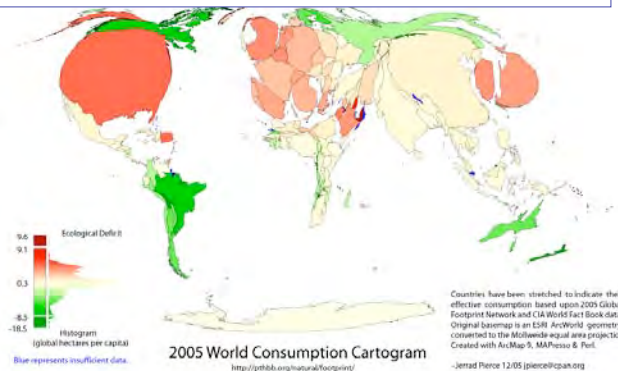
Year	Population (Billions)	Historical Period / Event
10 million years ago	~0	Old Stone Age
7000 B.C.	~0	New Stone Age
5000 B.C.	~0	Bronze Age
3000 B.C.	~0	Bronze Age
2000 B.C.	~0	Bronze Age
1000 B.C.	~0	Iron Age
A.D. 1	~0	Iron Age
A.D. 1000	~0	Modern Ages
A.D. 1800	~0.5	Modern Ages
A.D. 1900	~1.0	Modern Ages
A.D. 1950	~1.5	Modern Ages
A.D. 1975	~2.0	Modern Ages
A.D. 2000	~3.0	Modern Ages
A.D. 2100	~10.0	Future

All the water in the world (1.4087 billion cubic kilometres of it) including sea water, ice, lakes, rivers, ground water, clouds, etc. Shown on the same scale as the Earth.

All the air in the atmosphere (5140 trillion tonnes of it) gathered into a ball at sea-level density. Shown on the same scale as the Earth.

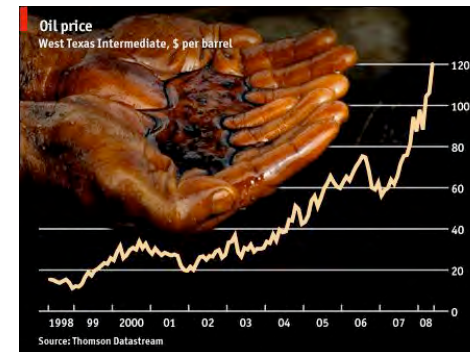
3. Resources

"The world will no longer be divided by the ideologies of 'left' and 'right',
but by those who accept ecological limits and those who don't"
Wolfgang Sachs, Wuppertal Institute

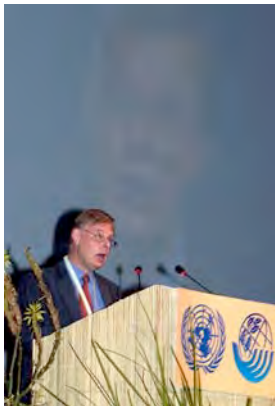


4. Energy

- Era of cheap carbon energy is over
- High prices needed to ensure supply keeps up with growing demand
- Cost of finding and extracting a new barrel of oil has doubled since 2000



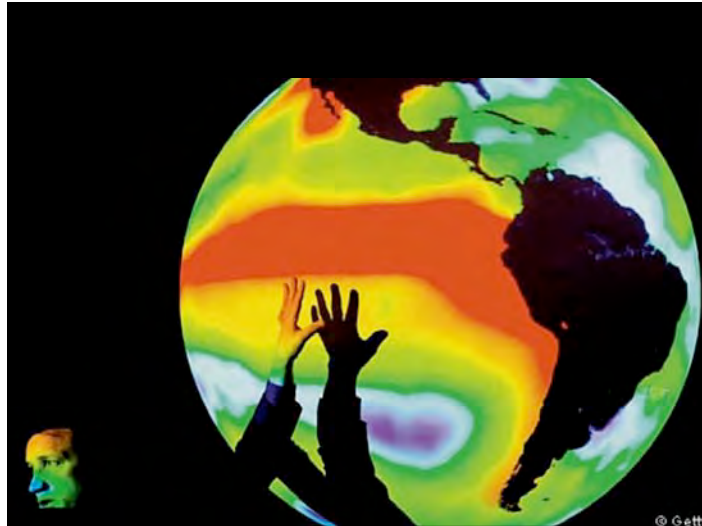
5. Food and water



- 50% increase in world food production by 2030...100% by 2050, UN says
- "The underlying problem is the decline in agricultural productivity."
 - Lennart Bage, head of the UN's International Fund for Agricultural Development
- "Unless we reverse that, we'll be back in the same situation in a few years time."
- Thus, the world needs to:
 - Ramp-up science
 - Invest in farming
 - Liberalise trade

6. Climate change

- "The problem of climate change is almost perfectly designed to test the limits of any modern society's capacity for response"
 - Daniel Abbasi, former Director, Yale School of Forestry & Environmental Studies
- "One might even call it the 'perfect problem' for its uniquely daunting confluence of forces"
 - Forces:
 - Issues seen as remote in time and place
 - Issues inherently complex
 - Problems politicised and obscured by cultural filters
 - Incentives and motivations block collective action
 - ...these thwart changes in attitudes and behaviour



7. Economy



- Reckless financial innovation...led to systemic failure...wealth destruction:
 - US\$30 trillion in equity markets at the markets' low point in March '09
 - US\$10 trillion in lost output
 - US\$ 8 trillion in credit market losses
 - US\$ 6 trillion in housing markets
- Inter-connected crises in energy, resources, food and society
- Bold, unprecedented actions needed to restore credit markets
 - ...US\$8 trillion stimulus from the US, Europe and Asia
- Some stability has returned
 - But plenty of risks on the downside...and huge rebuilding job to do

...and all linked

- "One of the characteristics of the current environment is that we're dealing with multiple crises,"

*Léo Apotheker
co-CEO, SAP*

"We have an economic downturn..."

But we also have an environmental crisis of significant proportions.

Global warming has made its effects felt and is no longer something to be disputed.

We also have an energy crisis.

And we have a scarcity of resource problem.

There are 7bn human beings on the planet and we need to feed them."



State of play...

"They go on in strange paradox, decided only to be undecided, resolved to be irresolute, adamant for drift, solid for fluidity, all-powerful to be impotent..."

"Owing to past neglect, in the face of the plainest warnings, we have entered upon a period of danger."

"The era of procrastination, of half measures, of soothing and baffling expedience of delays, is coming to its close."

"In its place we are entering a period of consequences...."

"We cannot avoid this period, we are in it now..."

- Winston Churchill, November 12, 1936

Universe 'n' us

- One man's view:
 - Mikhail Zlatkovsky, Russian political cartoonist



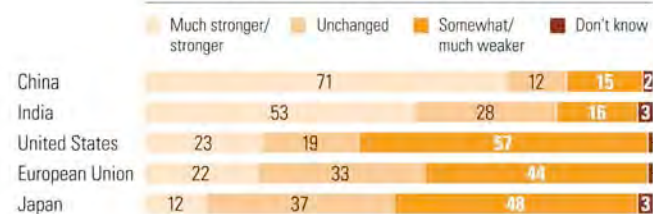
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1. Power shift

- So long, G8...hello, G20
- Power shifting from developed to developing countries
- As global business leaders see it
 - McKinsey's global CEO survey in April 2009

For each country/region, what do you expect its condition to be (in terms of influence in the world economy) as it emerges from economic crisis?



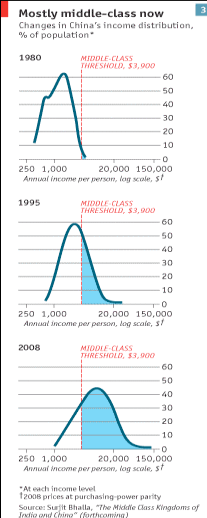
2. New middle class

- Old definition:
 - Per capita income of eg US\$4,000 per year
 - Or between 75% and 125% of median income
- New definition:
 - People for whom 1/3 or more of their spending is discretionary
 - Earning between US\$2 and US\$13 a day
 - New study by Martin Ravallion, World Bank
- Global:
 - 1990 - 1.4bn people 2005 - 2.6bn people



New middle class

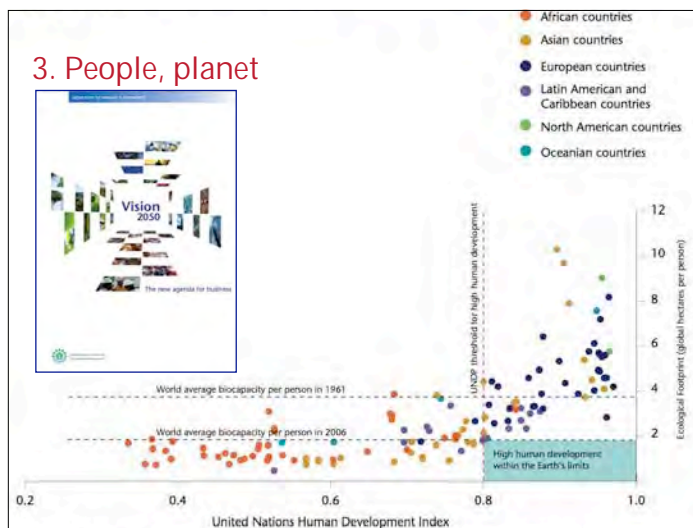
- “People who are not resigned to a life of poverty, who are prepared to make sacrifices to create a better life for themselves.”
 - Eduardo Giannetti da Fonseca, Brazilian economist
- People who are ambitious... and are doing something about it
- China:
 - 1990 - 147m people ... 2005 - 806m people
- Global recession will slow their progress...
- ...but it will revive
- But understanding their needs, selling to them...
- ...and satisfying them
- ...requires very different business models from the traditional ones



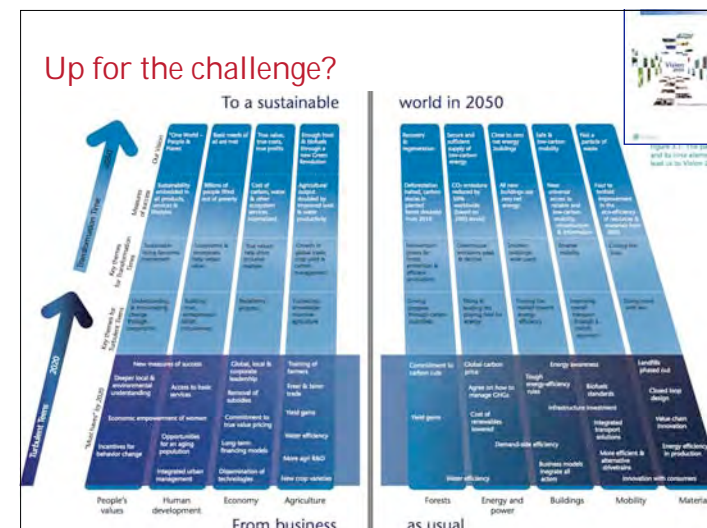
3. People, planet



3. People, planet



Up for the challenge?



Seismic shifts...our new playing field

- **Rebalancing**
 - From extreme deficit and surplus nations to balanced economies
 - NZ: we have to borrow, spend less; invest, earn more
- **Geo-political:** *from developed to developing countries*
 - We need to deepen our relationships in Asia and South America
- **Demand:** *from consumer goods to capital goods*
 - But capital goods are not our strength...
 - ...'tho we can contribute R&D & IP to eg agriculture & clean tech
 - Tougher old consumer markets a big challenge
 - Reaching new markets will be hard
- **Customer service:** *from accepting to demanding*
 - Finding new ways to find, listen and engage with them
 - Eg social networking and other world-changing ways

...our new playing field

- **Relationships:** *from transactions to partnerships*
 - ...particularly highly strategic ones
- **Innovation:** *from incremental to radical*
 - To meet new needs...in new ways
 - Open innovation and other forms of collaboration
 - New opportunities for NZ companies to partner with global ones
- **Sustainability:** *from fringe to mainstream*
 - Measuring and managing environmental flows through our businesses
 - Push down the road to true sustainability
- **Management:** *from tactical to strategic*
 - Need to collect, interpret and act on real-time data
 - Everything we do today is a piece of our big picture

Agenda

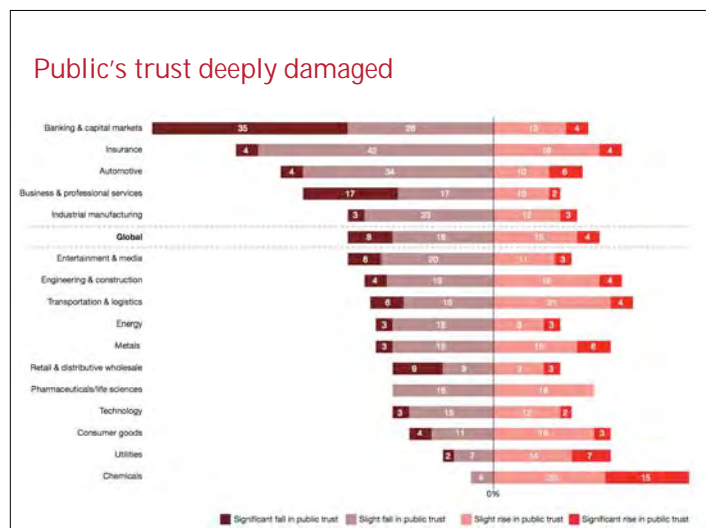
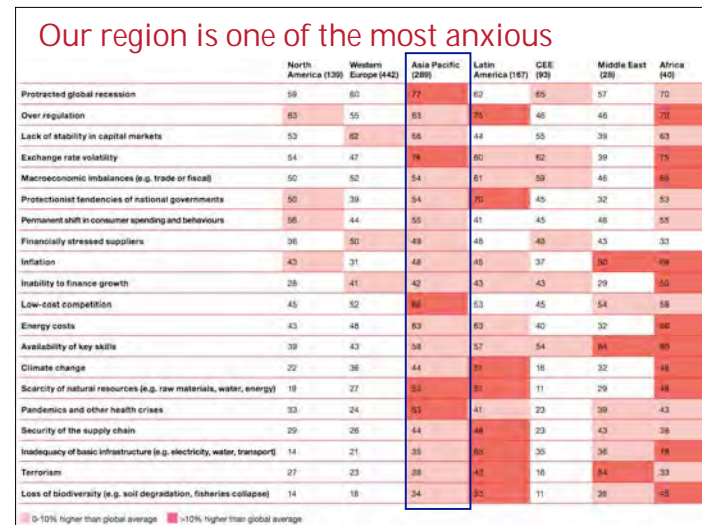
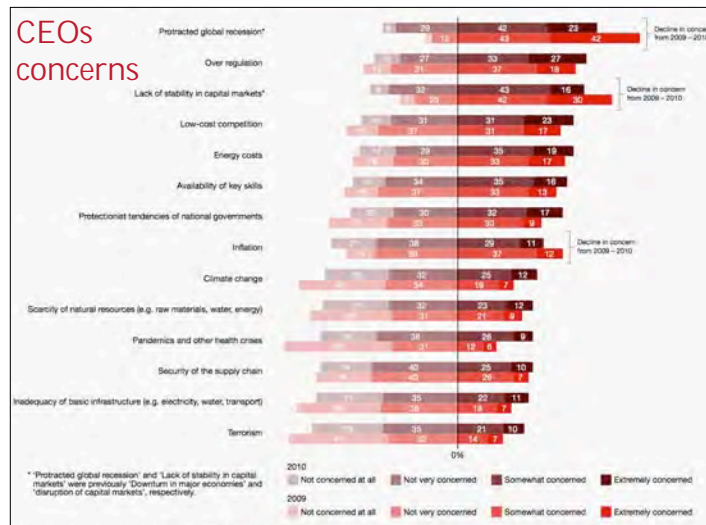
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Global CEOs

- Rethink volatility...
- Reshape strategy...
- Result: Smarter growth
- 2010 PricewaterhouseCooper's annual survey of the CEOs of the world's 1,200 largest companies



www.pwc.com



More consumer engagement



Response - social

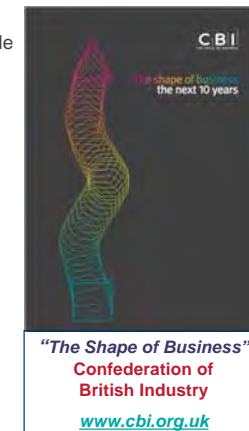
- The global response to these inter-linked crises is failing...
 - ...it's too hard politically
- So, paradoxically, the local response becomes ever-more important...
- To:
 - Make change happen
 - Give people hope and encouragement
 - Push national governments into the right policies
 - Bring countries together in international agreements
- Each person, family, community, region, country can...
 - Work on positive actions right for them
 - Plug into global knowledge and help
- Countless small, local actions aggregate up into a big global response

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The next 10 years

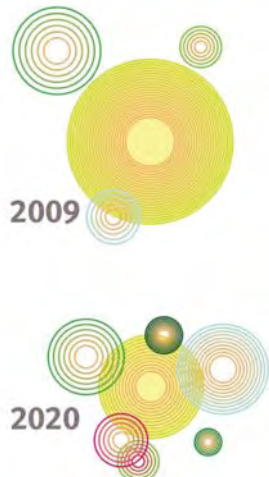

- Finance and capital conditions
 - Finance more expensive and less available
 - Market and regulatory constraints
- Less benign economic conditions
 - Higher economic volatility; Increased risk
- Low carbon-economy
 - New disciplines & technology
 - Far greater resource efficiency
 - Technology change accelerating
- Public losing trust in business
 - Scepticism over Anglo-Saxon model
 - More government intervention
- Social and demographic change
 - New responses to retirement, pensions
 - New business & government solutions
 - E.g. more flexible working practices



A rationalised and collaborative business model

Within 10 years

- Organisation and location:
 - Shift from transactional to collaborative relationships ...with a wide range of partners, suppliers, competitors
 - Supply chain dynamics a lot more complicated as risk becomes more significant factor in decision making



Harvard Business Review

Why Sustainability Is Now the Key Driver of Innovation

by Ram Nidumolu, C.K. Prahalad, and M.R. Rangaswami

“There is no alternative to sustainable development.

“Our research shows that sustainability is a mother lode of organisational and technological innovations that yield both bottom-line and top-line returns.

“Becoming environmentally-friendly lowers costs because companies end up reducing the inputs they use.

“In addition, the process generates additional revenues from better products or enables companies to create new businesses.

“In fact, because those are the goals of corporate innovation, we find that smart companies now treat sustainability as innovation’s new frontier.”



New disciplines

- Measuring the environmental flows through a business
- E.g. Walkers' carbon management and labeling...
- ...is a powerful business discipline, driving great efficiencies
- Transforming Walkers' business model, service delivery & relationships

	Farming	44%
	Manufacture	30%
	Packaging	15%
	Distribution	9%
	Disposal	2%

SOURCE: Walkers



This pack contains

Calories	265	13%
Sugar	0.4g	<1%
Fat	16.5g	24%
Sodium	1.3g	23%
Fiber	0.71g	12%

of an adult's guideline daily amount



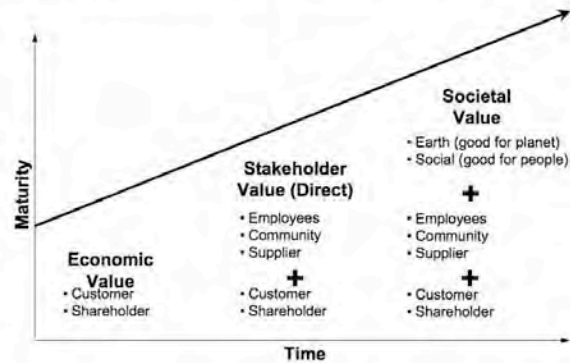
Wal-mart

- World's largest retailer
 - 1.8m employees; 5,000 US stores; 9% of US retail spending
 - Global sales US\$360bn, net profits US\$10.5bn
- October 2005 set some new goals:
 - Zero waste
 - 100% renewable energy
 - Shift to products that are better to the environment
- Key executive:
 - Andy Ruben, vice-president sustainability and strategy
 - Inspired by, eg. Ray Anderson, CEO of Interface Inc., and Paul Hawken's "The Ecology of Commerce"
- “Wal-Mart’s environmental goals started ‘top-down’ but really that energy came bottom up, from the people in the company who got engaged [in identifying] the business opportunities in all of this.”



Wal-mart: strategy also disrupts competitors

More Value for More Stakeholders



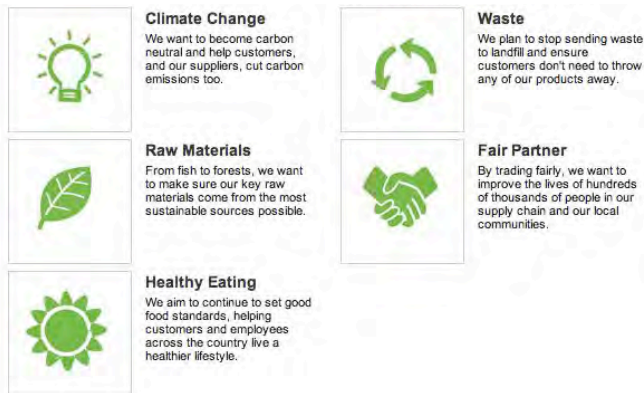
Marks & Spencer

- Plan A: A very comprehensive sustainability strategy
- "The biggest driver of innovation we've ever seen"



Marks & Spencer

- The five commitments



Good business

- "It's no longer a zero-sum game -- things that are good for the environment are also good for business."

Not because it is trendy or moral, but because it will accelerate growth"

- Jeff Immelt, Chairman and CEO, General Electric



- Double R&D spend on cleaner technologies to US\$1.5bn annually by 2010
- Double revenues from products & services with significant, measurable environmental performance gains to US\$20bn in 2010
 - e.g. renewable sources of energy such as wind and solar
- Reduce GE's greenhouse gas emissions & improve its energy efficiency:
 - Cut GHG emissions 30% by 2008 vs. 2004
 - Without action, they would rise 40% by 2012

A better future

- Wang Chuan-Fu
- BYD
 - “Build Your Dreams”
- Battery maker
 - Began 1995
 - 2002 in world top four
 - 100% recyclable
- 2003 begins car-making
- Detroit motor show 2009
- BYD plug-in electric car
- Warren Buffett bought a 10% stake for US\$230m



Re-conceiving...footprints

- Positive footprints
- ...the insight of Michael Braungart
 - www.braungart.com
- If we change our technology so our resource use benefits the ecosystem
- Then the more we consume...
 - ...the richer the environment
- Waste = food
- Four positive footprints:
 - Fabric of Airbus aircraft seats becomes compost for growing food
 - Formway's bio-plastic chair
 - Carbon positive farming
 - Ants vs. Humans
 - Positive role in ecosystem vs. negative...how do we make it positive?



Re-conceiving...biomimicry

- Imitating nature
- ...the technology discipline pioneered by Janine Benyus
 - www.biomimicry.net
- Fans, propellers like nautilus shells
- Wire ropes as strong as spider webs...
- ...made in cold biochemical processes



Community is powerful

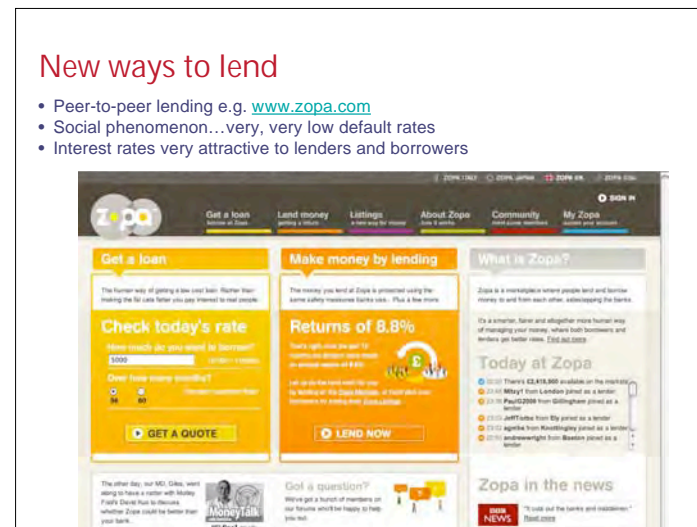
Blessed Unrest by Paul Hawken
Chronicling the rise of people power

“What the Apollo missions did for Earth, allowing us to see her for the first time entire, Paul Hawken is doing for us with this nameless, century-shaping movement of ours.

It's way bigger than we imagined.
And way more powerful.”

- John Elkington
Executive Director of Sustainability





We can do it

"What a great time to be born.
What a great time to be alive.

Because this generation
gets to completely change
the world."



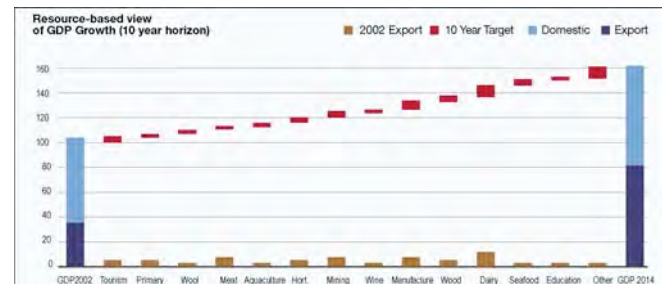
Paul Hawken

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We need to earn more

- The government's goal: catch up with Australian GDP per capita by 2025
- Domestic market too small to drive that, so we'd need to double the value of exports
- Can dairy double the value of its exports in real terms?
 - No it can't with its current strategy of incremental productivity increases
- Can tourism?
 - No it can't with its current reliance on a flood of short-stay, cheap Australians



Paradox

Abundance

Scarcity

Poverty

Mining

Green

Re-invention

Scarcity

Abundance

Wealth

Green

Mining

Icebreaker: Built new value chain

- Icebreaker...from sheep to Baa-code



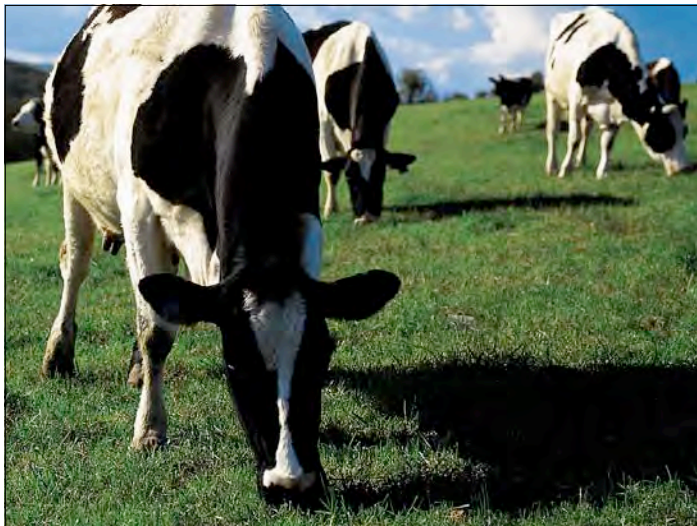
...virtually

- Jeremy Moon's 15-year journey
 - Concept
 - Brand
 - Product
 - Design
 - Production
 - Marketing
- Learning, constantly...
- Today:
 - 1/3 of NZ merino clip
 - ...at premium prices, on long-term contracts...has changed farming practices e.g. farmers produce to spec, invest more
 - 2m garments a year
 - Using multinationals' Shanghai cluster
 - US drive; Oregon design centre
 - 200 staff



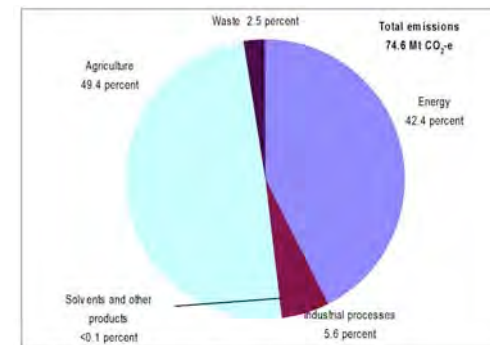
Zespri

- April 2009: Published its carbon life cycle analysis:
 - Orchard operations make up 17% of total emissions for EU exports
 - Packhouse & coolstore processes account for 11% of total emissions
 - Shipping accounts for 41% of total emissions
 - Repacking and retailer emissions amount to 9% of total emissions
 - Consumer consumption & disposal comprises 22% of total emissions
- Bottom line: resource efficiency builds a more profitable, resilient business
- E.G. Kite-assisted ships save 22% of their fuel bills on average



Our solution

- Less methane would mean healthier, higher yielding animals
- We are leading a global research consortium to reduce methane
 - It will generate high value at home, scientific & other revenues overseas



Source: Ministry for the Environment (2006 in press)

Clean-tech opportunities

- Lanzatech has attracted big venture capital backing
- Ethanol from flue gases....Auckland company backed by Tindall & Khosla
- Turns greenhouse gas liability into a profit



Biomimicry in New Zealand

- Synthetic chlorophyll...
- ...dyes devised at Massey by Wayne Campbell and colleagues
- 'Green' solar cells
- Very low energy to make of silicon solar cells
- Far more versatile...
- E.g. generate power in diffuse, cloudy light
- Potential to be an abundant, natural... boundless source of energy
- E.g. incorporated into windows and roofing materials

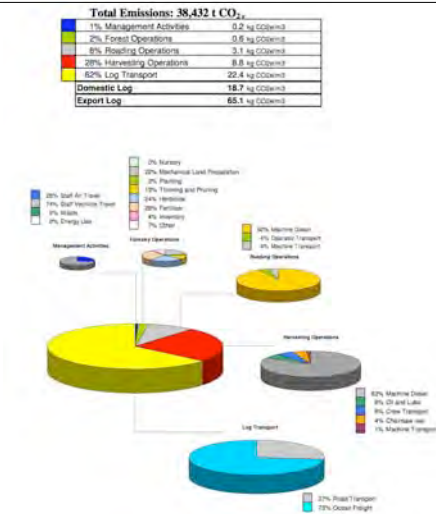


Marlborough

- One of our most beautiful and productive places
 - ...known around the world for its wine
- Yet until last winter, it never met air quality standards
- It did meet them last winter
 -in part because, some coal-burners switched to wood
- Part of a much bigger drive for the region to become carbon negative
 - ...store more carbon than it emits
- Growing a trees a big help
 - ...but what happens downstream to the logs and products?



Measuring



Understanding

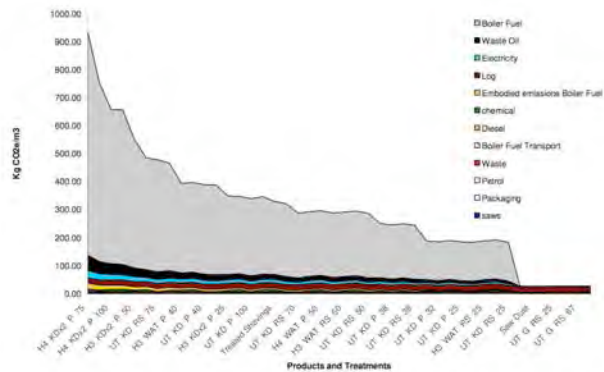


Figure 3: Emission profile including thermal energy emissions associated with burning biomass for products at Kaituna Mill.

Managing

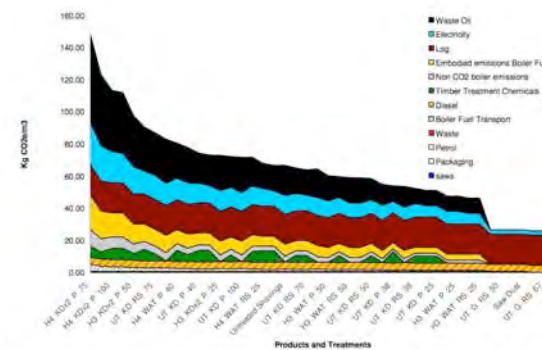


Figure 4: Emission profile excluding thermal energy emissions associated with burning biomass for products at Kaituna mill.

Articulating

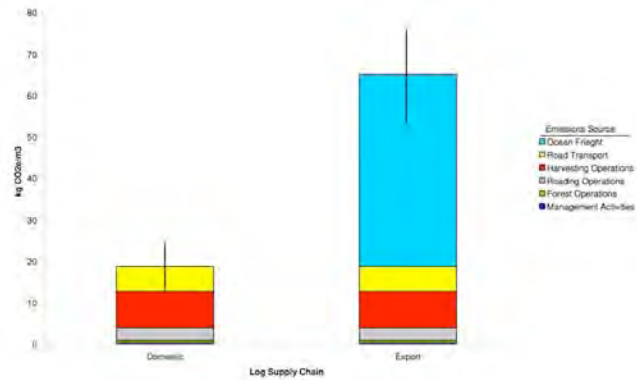


Figure 1: Carbon footprint of domestic and export logs.

Convincing

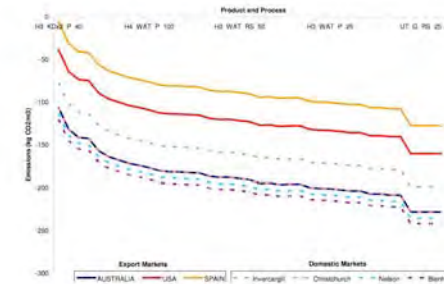


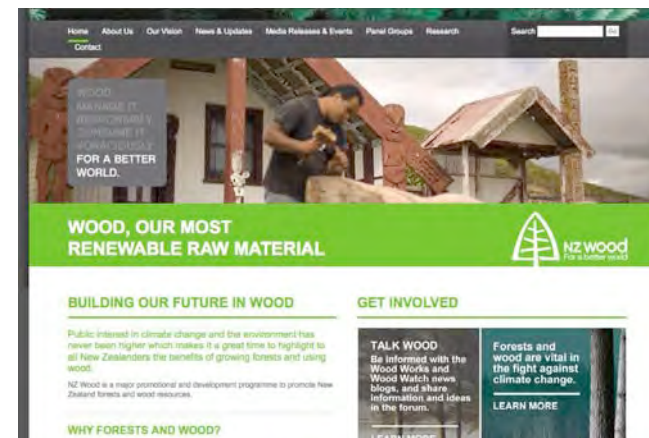
Figure 5: Emission profile excluding thermal energy emissions associated with burning biomass, including distribution emissions and including stored carbon for products at Kaituna mill.

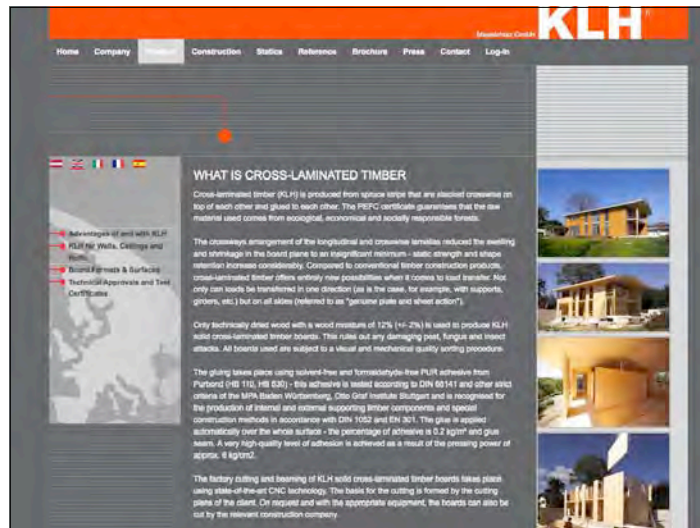
Branding



Figure 6: Concept carbon labels/brand with an association with the NZWood program.

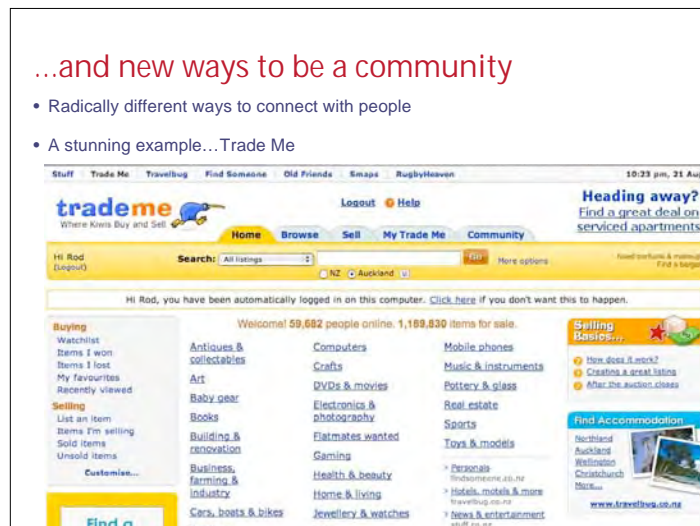
Wealth-generating



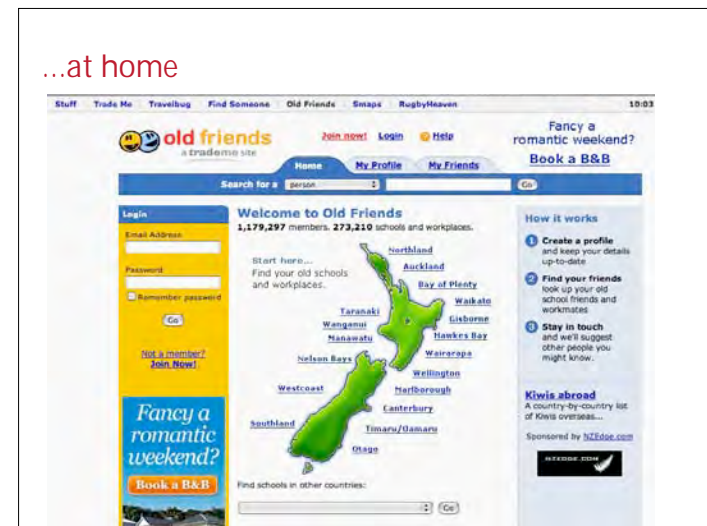


...and new ways to be a community

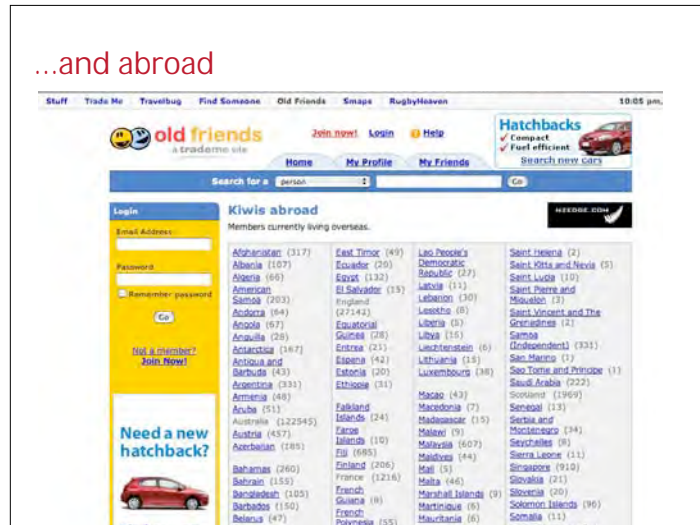
- Radically different ways to connect with people
- A stunning example...Trade Me



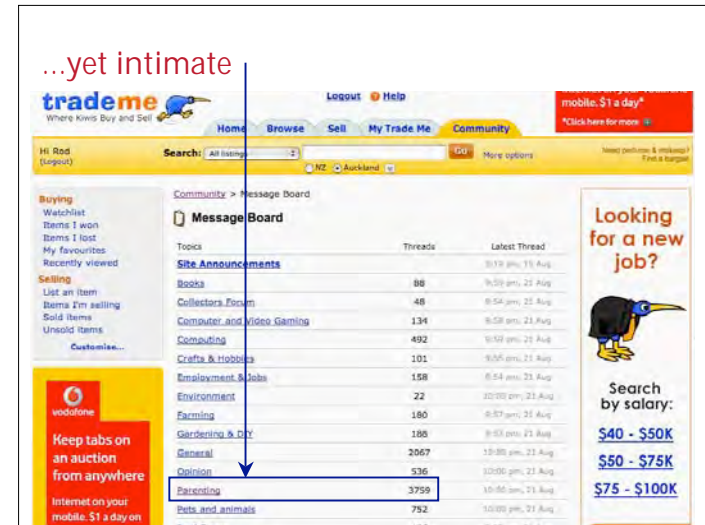
...at home



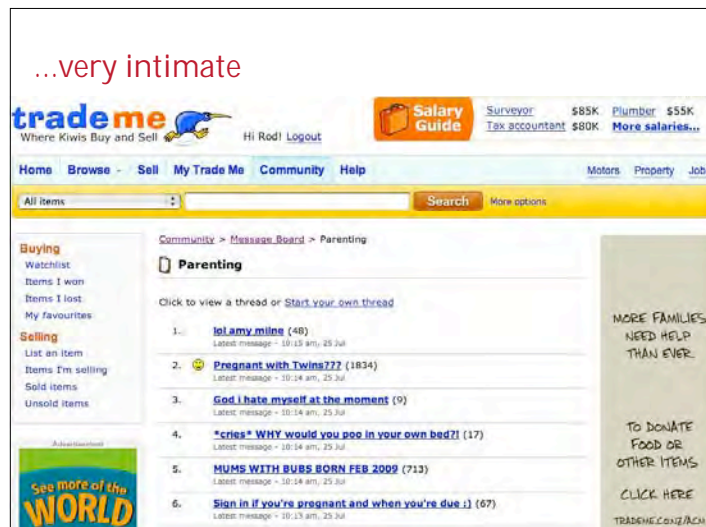
...and abroad



...yet intimate



...very intimate



NZ's transition towns

• www.transitiontowns.org.nz



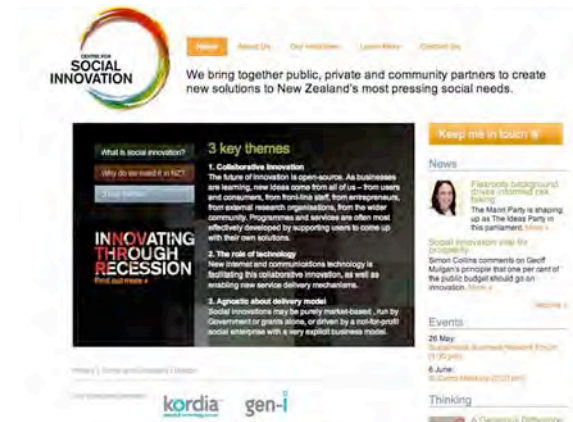
NZ activism

- 198,418 people (5% of entire NZ population) have signed on so far to Greenpeace campaign for a 40% cut in NZ greenhouse gases by 2020



Social innovation

- Meeting old needs in new ways...and new needs too



...coming soon to New Zealand

- www.nexx.co.nz launching soon
- Its peer-to-peer system potentially a back office for philanthropy



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The world wants...

- **Connection**
 - ...with real people
- **Authenticity**
 - ...of relationships
- **Trust**
 - ...in organisations and their offerings
- **Innovation**
 - ...in technology, products and processes
- **Progress**
 - ...towards resilience and stability
- **Comfort**
 - ...for themselves and others
- **Sustainability**
 - ...of nature and society
- **Belief**
 - ...in a better world

...what we offer

- An exciting new breed of NZ companies is delivering all of those...
- Hallmarks:
 - Inspired products & services offering unique value
 - Originality born of NZ roots
 - Smart strategies for international markets
 - Astute management skills to acquire & develop human & technology skills; capital
 - Confidence & skills to collaborate with partners, suppliers, customers abroad
- Across the economy: domestic; import; export

Farmhand, by JK Baxter

You will see him light a cigarette
At the hall door careless, leaning back
Against the wall, or telling some old joke
To a friend, or looking out into the secret night.

But always his eyes turn
To the dance floor and the girls drifting like flowers
Before the music that tears
Slowly in his mind an old wound open.

His red sunburnt face and hairy hands
Were not made for dancing or love-making
But rather the earth wave breaking
To the plough, and crops slow-growing as his mind.

He has no girl to run her fingers through
His sandy hair, and giggle at his side
When Sunday couples walk. Instead
He has his awkward hopes, his envious dreams to yarn to.

But ah in harvest watch him
Forking stooks, effortless and strong -
Or listening like a lover to the song
Clear, without fault, of a new tractor engine

We will...



...twirl the world
...on the dance floor of
our beautiful and bountiful land

