

Rod Oram's presentation to the  
New Zealand Grassland Association  
Gisborne, November 8th, 2011

**Making our Future**

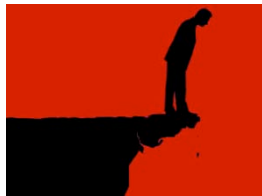
**The primary sector...  
...but not as we know it**

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## Agenda

- World
- New Zealand
- Opportunity
- Paradox
- Un-strategy
- Strategy
- Imperatives
- Advantage

## Then....



- **2007-09**
- Sudden liquidity crisis
- Big, quick fix
  - Pump in lots of money
- Lots of political will
- Lots of public support
- Worked fast
- Markets re-assured
- Moved on to current phase

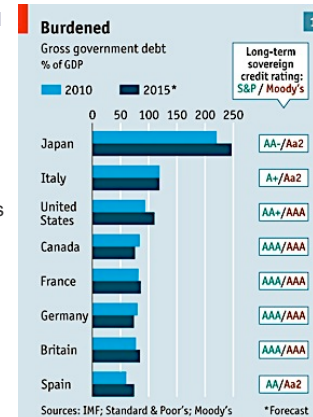
## ...Now



- **2009-??**
- Long-running structural crisis
- Big, slow fix
  - Restructure economies
- Lack of political will
- Lack of public support
- Will work slowly
- Markets fearful
- Very, very stuck

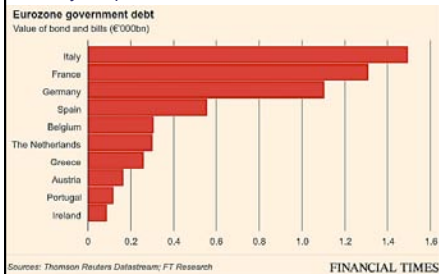
## Government debt

- Slowing growth hits governments hard
- Old economies the most stressed
  - ...some are getting worse
  - ...few are cutting debt
- Not what you owe...but who you owe
  - Easy: heavy domestic investors
  - Hard: heavy international investors
- Some attempts at economic change
  - UK, Ireland...with big risks
- Many failing with economic issues
  - Greece, Spain, Italy
- All facing severe political tests



## Market fears

- Investors pricing in big risk
- Bailouts only offer temporary relief
- The scale of problems escalating
- Spain = Greece + Ireland + Portugal
- France = Spain + Grc + Ire + Prt
- Italy + Sp + Grc + Ire + Prt = €4.5 trillion



## Diagnosis

- This is not a recession...which is cyclical
- This is a contraction...which is structural
- Consequently:
  - The debt-burdened economies of high-income countries are very fragile
  - Investors have next-to-no confidence in policy-makers to act decisively
  - So, investors are seeking the least risky assets:
    - If they fear deflation - bonds of the highest rated government
    - If they fear inflation - gold
    - If they can't decide - both
  - Few investors or corporate managers want to take any longer-term investment risk

## Possible remedies - US

- US:
  - Fed says it will keep interest rates at virtually zero as long as necessary
  - ...will do more Quantitative Easing
- Its balance sheet is very heavily burdened by bad assets from the liquidity crisis
- But dealing with underlying government debt issues will be extremely difficult
- US politics are deeply dysfunctional
- US economy has deep structural issues



## Possible remedies - Europe

- European Union
  - Strategy: buy time by taking market pressure off governments...
    - ...hope markets will calm down, gain a bit of confidence in economies
  - Stabilisation Fund main vehicle so far
    - ...but too tiny for big rescues
  - European Central Bank has begun buying Italian and Spanish government bonds...but legal challenges to that tactic
  - Big push for fiscal federalism in EU
    - "We need more not less EU"
  - But the politics are very difficult...
    - ...particularly in Germany and between France and Germany
- The economics of structural change are very difficult too



## Prognosis

- Governments and central banks are very short of policy tools
- There are no quick fixes
- No country is immune
- Sharp slowdown in troubled countries will impact others... causing tensions
- Old, stagnant economies have to restructure heavily, reduce debt sharply before they regain vitality
- Shift of momentum and power to developing world will accelerate
- 2008 was the start of a new world order
- Many more phases to unfold yet



## Hunkering down

- **Countries**
  - More protective of their economies
  - More resistant to trade deals
  - Less strategic, co-operative
- **Consumers**
  - More stressed, more price conscious
  - More demanding...e.g. service
  - Less discerning...e.g. origin
- **Retailers**
  - More competitive
  - More demanding on producers
  - A few focused on producer relationships...but drive them very hard
- **Producers**
  - The buck stops with you
  - Very strong differentiation...the only way to deflect some of the pressure

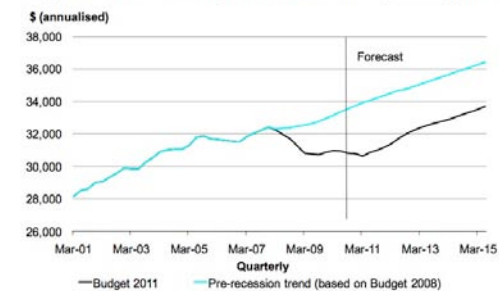
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## Slowth

- Growth no faster after recession than before recession
  - ...need 2x faster to deliver economic and social benefits we need

**Figure 1.11 – Real production GDP per capita**

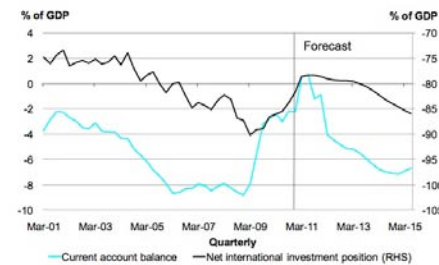


Sources: Statistics New Zealand, The Treasury

## Current account and net int'l liabilities

Our net international liabilities heading back to 85% of GDP, one of the highest rates in OECD...  
...same level as before the recession or 2008 election

**Figure 1.13 – Current account and net IIP**

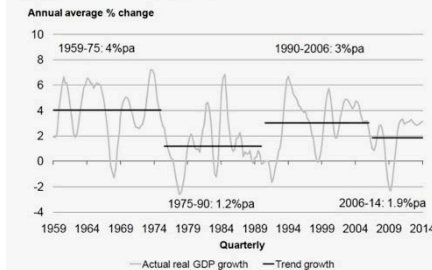


Sources: Statistics New Zealand, The Treasury

## ...we must double growth

- We need to more than double our growth rate to at least 5% a year
- ...but our non-inflationary growth rate has dropped to 1.9%
- ...and the growth trend will remain weak out to 2014, Treasury forecasts

**Figure 1 – Trend growth**



Sources: Hall and McDermott (2009), Statistics New Zealand, The Treasury

## Messages from the markets

- Since 2007, big shift by investors: From tolerance to vigilance of risk & debt
- They are demanding of...
- Governments: fiscal discipline; plausible plans for sustainable debt levels
  - We're doing OK on that; debt levels modest by OECD comparisons
- Households: reasonable spending, saving, debt levels
  - We're doing badly: spending ticking up; savings still low; debt levels 3<sup>rd</sup> highest in OECD
- Exports: sufficient to pay for imports
  - Doing better...but still weak considering strong terms-of-trade and strong growth in our main export markets – China and Australia
- Investment flows: reasonable balance in and out of country
  - We're very dependent on foreign financing so flow heavily negative
- Current account: surplus or moderate deficit
  - Our deficit is growing strongly again
- Net international liabilities: manageable
  - Ours are among the highest in the OECD...and growing

## Grading ourselves

[www.nzinstitute.org](http://www.nzinstitute.org)

## Grading ourselves

	Grade	NZ Rank	Trend	Latest Value	2015 Target	
Social						
Life expectancy	B	11th of 34	✓	80.8 years	82.4	More
Unemployment	C	12th of 34	=	6.5%	4.0	More
Income inequality	D	29th of 34	=	Gini value 0.33	0.31	More
Assault mortality	D	23rd equal of 33	=	1.3 per 100,000	1.2	More
Suicide	C	20th of 33	=	11.2 per 100,000	9.0	More
Economic						
GDP per capita	C	22nd of 34	=	\$42,438	53,000	More
Household wealth	D	24th of 34	✓	17.7% GHS rate	22	More
Labour productivity	D	24th of 34	✓	\$49 per hour	\$59	More
Innovation and business sophistication	D	21st of 34	✓	4.3 index value	5.0	More
Educational achievement	B	9th of 34	=	524 mean PISA score	531	More

## Grading ourselves

Environmental						
Agricultural land per capita	B	3rd of 34	✗	2.7 Ha	2.5	More
Water quality	C	Not available	✗	0.99 mg/L nitrate	1.00	More
CO2 concentration in the atmosphere	D	Not applicable	✗	392 ppm	395	More
CO2e emissions per capita	D	26th of 30	✓	16.8 t	13.6	More
Invasive species	C	Not applicable		3.3b cost	Reduced annual cost	More
Summary grades						
From the New Zealand Institute	C		=	C. Effort graded B-		More
Your voice	C		=			More
Net migration of citizens	C	Not applicable	✗	-29,904	-15,000	More

• Join the debate at [www.nzinstitute.org](http://www.nzinstitute.org)

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## 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

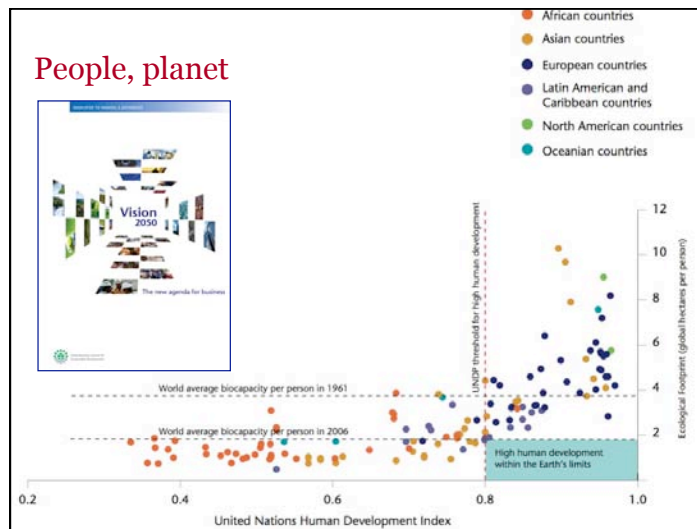
- **Relationships:** from transactions to partnerships
  - ...particularly highly strategic ones
- **Innovation:** from incremental to radical
  - To meet new needs...in new ways
  - Open innovation and other forms of collaboration
  - New opportunities for NZ companies to partner with global ones
- **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

## People, planet

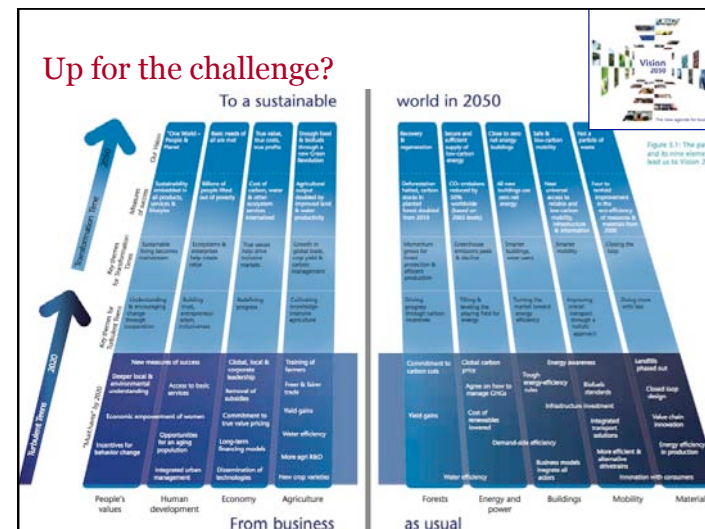
- Vision 2050
- A very challenging roadmap for corporate development by World Business Council for Sustainable Development



## People, planet



## Up for the challenge?





## Innovation

### Harvard Business Review

**Why Sustainability Is Now the Key Driver of Innovation**  
by Ram Nidumolu, C.K. Prahalad, and M.R. Rangaswami



*How Green Will Save Us*: September, 2009 edition:

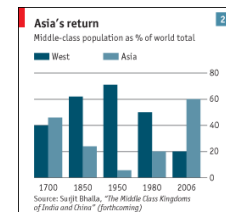
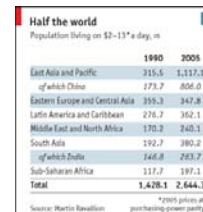
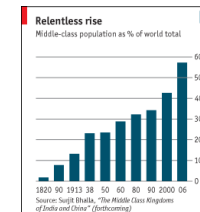
"There is no alternative to sustainable development.

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

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

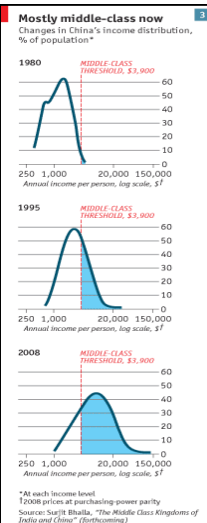
## Demand: New consumers

- Middle class: old definition:
  - Per capita income of eg US\$4,000 per year
  - Or between 75% and 125% of median income
- Middle class: 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
- But understanding their needs, selling to them...
  - ...and satisfying them
  - ...requires very different business models from the traditional ones



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Paradox

Abundance

Scarcity

Poverty

Cows

Scientists

Poverty

Coal

Value

Poverty

Tourists

Engagement



Poverty

**Sustainability**

Weak

Strong

Re-invention

**Scarcity**

Abundance

Wealth

**Lacto-pharmaceuticals**

Milk powder

Wealth

**Rare earths**

Green mining

Wealth

Travellers

Tourists

Wealth

Sustainability

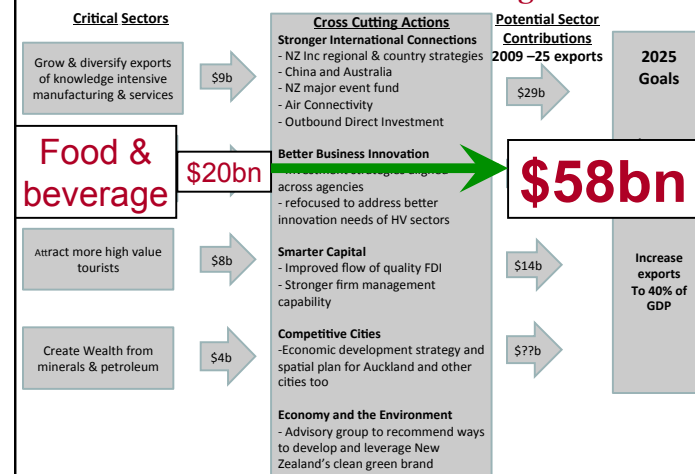
Strong

Weak

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## Government's Economic Growth Agenda



## Primary sector strategies:

- Meat
  - Can't co-operate, losing critical mass, down to 33m sheep
- Dairy
  - Commodity trap at home; science still heavily production focused
  - Global strategy deeply flawed...
    - ...a few good bits e.g Fonterra as a trader
    - ...but many bad examples e.g. Fonterra in China; Synlait Milk's sale; NZFS Uruguay
- Horticulture
  - Good but conventional; export-only strategy, kiwifruit excepted
- Viticulture
  - Very good products & brand under threat; what's the next trick?
- Seafood
  - Good but volume & value constrained; aquaculture stymied; what's the next trick?
- Forestry
  - Big sell down of NZ ownership; commodity market driven; hangs on carbon price
- Kiwifruit
  - Growers have their act together...in research, on orchard, with Zespri & overseas

## Some simple maths

- We need to double the size of the economy in 15 years in real terms
- To maintain its role, the primary sector needs to double too
- But government wants primary sector to treble...grow, say, 8% a year
- The primary sector can:
  - Grow volume a bit...
    - ...but real physical constraints in New Zealand
  - Grow productivity a bit...
    - ...but historic rate of NZ agricultural productivity increases about 2% a year
  - Benefit a bit from higher world prices...
    - ...but commodity prices moderated overseas competition and politics
  - Earn a bit of a premium for NZ quality and brand
    - ...but it would need to break free from retailers' stranglehold
  - Stave off overseas competition a bit...
    - ...but the competition gets ever better on cost, volume and quality
- Government's primary sector strategy: incremental growth of current model
- So, the primary sector's current commodity model fails on simple maths

## Uruguay...wonderful opportunity lost



## Synlait...wonderful opportunity

- Very brave and ambitious strategy
- Good progress on many fronts...
- ...but setbacks e.g...
  - Failed stock market float
  - Sale of majority control of Synlait Milk to Bright Dairy of China



## Meat

- Farm IQ Systems
  - JV of Silver Fern Farms, PGG Wrightson and Landcorp
  - Private sector will invest \$92m over seven years...
    - SFF \$68m; Wrightson & Landcorp some cash, mostly in-kind skills
  - ...and government \$60m
  - Produce \$521m of net economic gains over seven years
    - ...mostly on-farm in early years...
    - ...gross margins per hectare double after year two
    - Sounds very optimistic overall
- If this is a true value chain reinvention...where are the supermarkets?
  - Project might create more value...but the supermarkets will capture it

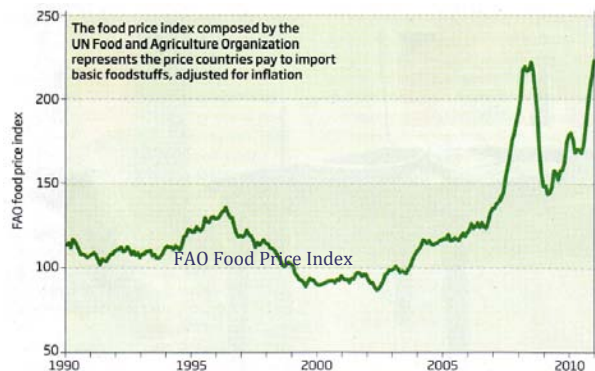


## Food



- 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

## Food prices

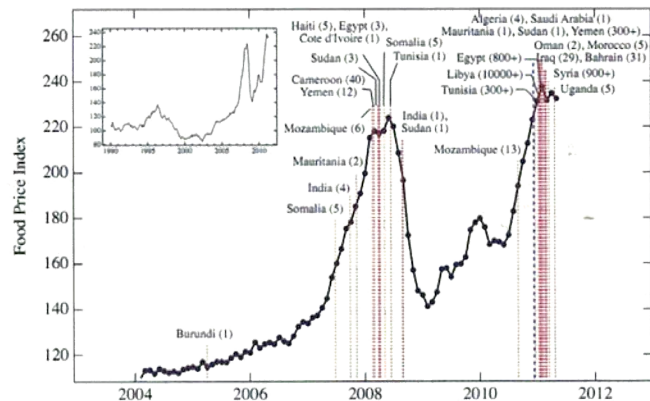


## Commodity prices

- How high will they go?
  - Higher
- But for how long?
  - Depends on supply and demand; and competition from other foods
  - ...varies by sector
  - New, higher trading range established; but much greater price volatility
- Dairy
  - At US\$3,500 per tonne for whole milk powder, plenty of incentives overseas to add cows, farms and intensify...and make a profit
  - Above US\$3,500 per tonne milk consumer resistance starts in some countries...
  - ...and milk faces competition from soya and other ingredients
  - ...food processors start switching from milk to them in their recipes
- Lamb and beef
  - ...similar dynamics
- The ultimate cap: high food prices cause riots, trigger political responses

## High prices = riots

Relationship between food price spikes and protests in selected countries



Source: New England Complex Systems Institute

## Global dairy prices to 2020

OECD-FAO  
Agricultural Outlook  
2011-2020

Figure 9.2. Prices in real terms are expected to stay relatively flat  
World dairy prices in real terms (2005 USD)



Source: OECD and FAO Secretariats.

## Developing countries - fast growth

OECD-FAO  
Agricultural Outlook  
2011-2020

Table 1.1 Production and consumption annual growth rates (least squares) 2010-2019

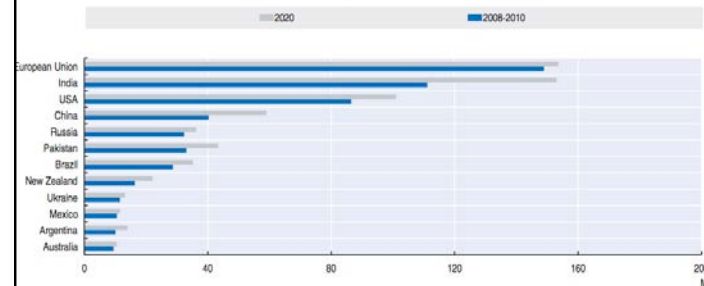
	PRODUCTION %			CONSUMPTION %		
	Total	OECD	NON-OECD	Total	OECD	NON-OECD
Wheat	1.1	0.8	1.3	1.2	1.0	1.3
Rice	1.0	0.3	1.1	1.1	0.6	1.1
Coarse grains	1.6	1.0	2.1	1.5	0.9	2.1
Oilseeds	1.9	1.3	2.2	1.9	1.4	2.2
Protein meal	2.2	1.5	2.5	2.2	1.0	3.2
Beef	1.5	0.5	2.2	1.5	0.6	2.1
Pig meat	1.7	0.7	2.3	1.8	0.7	2.3
Poultry meat	2.4	1.3	3.0	2.4	1.6	2.8
Milk	2.2	0.8	3.1	..	..	..
Butter	2.2	0.7	3.0	2.1	0.4	2.9
Cheese	1.8	1.3	3.1	1.8	1.3	2.9
Skim milk powder	1.0	0.3	3.0	1.0	0.2	1.8
Whole milk powder	2.5	0.7	3.8	2.5	1.0	2.9
Vegetable oils	2.9	1.7	3.2	2.8	2.3	3.1
Sugar	1.4	0.0	1.8	1.8	0.5	2.2

Source: OECD and FAO Secretariats.

## Global dairy production to 2020

OECD-FAO  
Agricultural Outlook  
2011-2020

Figure 9.3. Substantial regional differences in production growth remain  
Milk production growth (2008/10 – 2020)



Source: OECD and FAO Secretariats.

## Brazil

- The agricultural powerhouse



## Fazenda Leite Verde

- New Zealand investor group bought 15,000 ha of Brazil in 2001
- Big challenges:
  - Virgin land; big adaptation
  - "We're learning to drive a biological Ferrari"
- Invested downstream...UHT plant, Leitissimo brand



## Fonterra's strategy

- Be a global supplier
  - NZ milk volume grows too slowly...
  - ...so farm in China, India and add overseas third-party supply
- Add expertise and value to food manufacturers
  - E.g. in ingredients, supply chain
- Create consumer value with own brands
  - Grown consumer ebitda 19% a year 2007-2010
  - But still relatively small vs commodities / ingredients
- But what's the role for shareholder / farmers in NZ?
  - NZ no longer the lowest cost producer
  - Growing international competition in farming, processing
  - Little if any premium for NZ supply vs overseas
- NZ dairy industry response
  - Vast majority of research is on-farm efficiency **not** downstream value

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## Seismic shifts...

### ....primary sector's new playing field

- **Rebalancing**
  - From being largely an exporter...
  - ...to global partnerships, investment, trade and value chain
- **Geo-political: from developed to developing countries**
  - Deepen your relationships in Asia and elsewhere
- **Demand: from consumer goods to capital goods**
  - Lead on IP of farming & sustainability
  - Revive old markets
  - Pioneer new ways to reach new markets
- **Customer service: from accepting to demanding**
  - Finding new ways to find, listen and engage with them
  - Eg social networking and other world-changing ways

## ...primary sector's new playing field

- **Relationships: from transactions to partnerships**
  - Invest in highly strategic ones; build tactical ones for the long-term
- **Innovation: from incremental to radical**
  - Drive science hard, on farm and downstream
  - Partner deeply, here and abroad
  - Deliver health benefits to consumers...and business benefits to partners
- **Sustainability: from fringe to mainstream**
  - Measuring and managing environmental flows through your business
  - Push down the road to true sustainability
- **Management: from tactical to strategic**
  - Manage in real-time...
  - ...making sure everything you do today is a piece of your strategy

## Zespri

- Established brand
- Built marketing
- Innovated – gold
- Innovated – orchards
- Innovated – intellectual property
- Clever, 12-month supply chain
- 40% - 100% premium in EU
- 1/3 world supply...
- ...but captures 2/3 of value
- ...and lots more science yet

From exporter to global leader...  
...decommoditising a commodity



## Comvita: High science, high value

- 250gm of honey
- Clover honey..... 1
- Comvita wound care..... 25x
- Comvita wound dressing..... 55x
- 1 gm of UMF 20 honey in cosmetics...US\$1





## Sealord: Category power

- Waitrose: high-end UK supermarket; big on fish
- A NZ company manages the category for it...
  - Sealord...and its UK processing plant
- Takes huge commitment, sophistication and capability
  - ...and creates a valuable, long-term partnership
- And no NZ fish involved

The screenshot shows the Waitrose.com website. At the top, there's a banner for 'CHILEAN WINE 20% OFF'. Below it, the 'your world wide net' section features a world map with arrows pointing to various countries, accompanied by text: 'Sealord in Europe industrial seafood in Europe foodservice Sealord North America Sealord South America Sealord Japan Sealord in Australia Sealord in New Zealand'. Other sections visible include 'Online Shopping', 'Food & Drink', 'Fish at Waitrose', and 'Recipes'.

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## Our three big, new drivers

- New Zealand needs to make some very big strategic shifts
- **Trade:**
  - **Now:** We are low-cost, abundant producers...seeking more market access
  - **Future:** We are the high-value producers...seeking partnerships
- **Investment:**
  - **Now:** Still heavily domestic; only a few players trying to go global
  - **Future:** Global companies with some outside capital
- **Science:**
  - **Now:** Incremental progress of traditional science, applied locally
  - **Future:** Big leaps of radical science...applied globally

## Science engagement

- Nestlé's latest *incremental* investment in bioactives and nutraceuticals...

**US\$500m**

- What about our investment in downstream science?
  - ...mostly still up-stream, on-farm
- What our business capability to commercialise it?
  - ...minimal...no amount of rejigging CRI structures will change that

**• The strategic failure is corporate**

## Our future

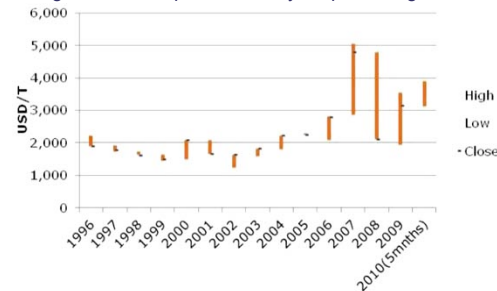
- NZ Land: 270,000 sq km
  - Australia's 28x NZ
- NZ Oceans: 5.8m sq km
  - 5<sup>th</sup> largest in the world
  - Australia's 1.4x NZ's
- Huge responsibility:
  - ...to nurture
  - ...to use responsibly
  - ...to sustain us
  - ...we get \$184bn of ecosystem services for free
- We need new values, systems, learning, collaboration:
  - ...to be sustainable
  - ...to offer hope to the world



## Price volatility

- Price volatility has increased dramatically...and permanently
  - For inputs (feed, fertiliser, livestock, land) and products
- Farmers need new financial modeling, analysis and management tools
  - ...all intensely data-driven...much of it in real-time, online

- E.g. Whole milk powder intra-year price ranges



## New trading - internet auction

- globalDairyTrade...a very brave innovation by Fonterra
- Brought transparency to dairy commodity pricing
- Rubbished by farmers, applauded by customers
- Enables Fonterra to price much more consistently...
- ...manage better, charge premium for true value-add
- Farmers better off...so are their customers



## New finance

- Capital structures and financial flows grow ever-more complex
- E.g. Fonterra's capital
  - Share trading between farmers
  - Twin income streams: commodity price + value added divided
    - Farmer can choose to finance share purchases by splitting income...
    - ...keeping commodity return; foregoing dividend and share value change
- More complex structures will evolve...in dairying and other sectors
  - ...all requiring more active, sophisticated analysis and management by farmers, investors, market makers and third parties

## New trading - futures

**Market Info**

The price of futures is mainly driven by prices in the physical (cash) market, however information and data points which support views on future price movements are essential.

NZX provides a multitude of key data points, views and commentary to help traders price futures contracts in the dairy market.

**Quotes**

- globalDairyTrade Data
- The Dairy Trader
- News
- Reports
- Statistics
- Industry Links

**NZX Mkts**

## New trading - futures

**Milk matters to people everywhere.**

Dairy products are amongst the most important of all traded food products.

**NZX Mkts**

## New trading - futures

Market Data is delayed by 20 minutes

Trade Date: October 27, 2010

Contract Code	Contract Month	Bid Volume	Bid	Offer	Offer Volume	Last	Change	Prior Settle	Open	High	Low	Volume Traded	Last Traded	Prior Day Open Interest
WMPFV10	OCT 10	10	3400	3480	10	0	0	3525	0	0	0	0	18/10/2010	20
WMPFX10	NOV 10	5	3400	3500	5	0	0	3450	0	0	0	0	-	0
WMPFZ10	DEC 10	0	0	3615	10	0	0	3515	0	0	0	0	-	0
WMPFF11	JAN 11	0	0	3725	10	0	0	3465	0	0	0	0	-	0
WMPFG11	FEB 11	0	0	3900	10	0	0	3465	0	0	0	0	-	0
WMPFH11	MAR 11	0	0	3920	10	0	0	3465	0	0	0	0	-	0
WMPFJ11	APR 11	0	0	3925	10	0	0	3560	0	0	0	0	-	0
WMPFK11	MAY 11	0	0	3940	10	0	0	3560	0	0	0	0	-	0

## Data-driven kiwifruit

- Some of the new disciplines:
  - Counting winter buds
    - Optimal flower numbers, rewarding staff
  - Counting flowers
    - Maximising pollination
  - Hive auditing
    - Maximising pollination
  - Fruit-size monitoring
    - Adjust cropload to maximise returns
  - Soil and leaf testing
    - Maximise nutrition
  - Pest monitoring
    - Minimising sprays
  - Pre-harvest tests:
    - Fruit size, dry matter, maturity monitoring
    - Determine optimal time to pick
  - Packhouse reject analysis
    - Maximise Class 1 packout



## New mapping

- Boon to land management...huge help to forest owners in the ETS

## New management

- Early efforts in data collection, analysis, benchmarking

## New decision-making

- ...more intelligence, less hunch in critical decisions

## New communications

- Getting the word and numbers out to stakeholders




## New precision

- Real-time measurement of critical resources...
- ...drives much high efficiency



## New eco-balance

- Far better environmental outcomes



### OVERSEER Applications

• [OVERSEER Applications](#)

Use these pages to find out more about how OVERSEER® can help you

**Nutrient Budgets**

Nutrient budgets are an important tool in assessing the environmental impact and sustainability of agricultural management on a farm.

OVERSEER® calculates on-farm budgets for a wide range of nutrients and farming systems (pastoral, arable/vegetable and fruit crops) based on data inputs readily available from the farm. Understanding the fate of these nutrients is an important precursor to developing a Nutrient Management Plan.

**Greenhouse gas emissions**

Agriculture contributes just under half of NZ's total GHG emissions (48% calculated for 2007).

OVERSEER® calculates and reports farm-level emissions for pastoral farms based on the standard National Inventory methodology, allowing users to identify major sources on farms and to test management strategies for decreasing emissions.

**Maintenance fertiliser applications**

Fertiliser best management practices should consider economic, environmental and economic factors.

**Understanding nutrient inputs**

*Are they all needed? Alternative sources? Are nutrients being used as cost-effectively as possible?*

**Understanding nutrient outputs**

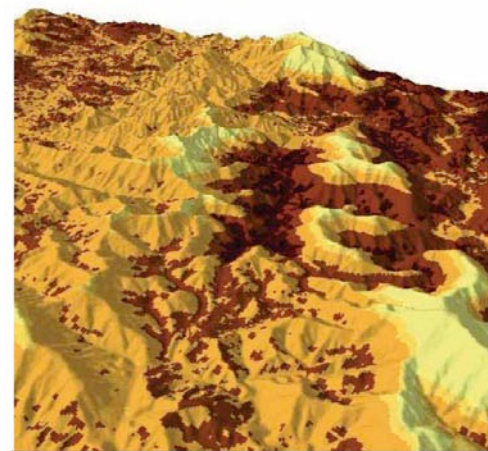
*What proportion is leaving the farm in saleable produce? How efficient is the system and can it be improved? Where is the waste - losses to air (greenhouse gases) and losses to water? Can these be reduced?*

**What if?**

## Ecosystems

- Managing very complex biological relationships

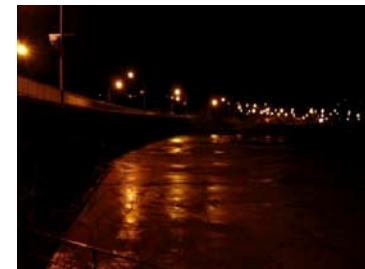
Figure 13 Digital mapping for possum control



Note: The darker the colour, the higher the predicted possum abundance.  
Source: Ecological Associates case study

## Land use

- On the night of February 14/15, 2004 a heavy storm hit the Manawatu region in the southwest part of the North Island
- This is the Fitzherbert Bridge in Palmerston North...
- ...right next to Massey University, home of NZ' s best agricultural academics
- Thanks to NZ land management practices...
- ...28 tonnes of top soil were being swept *per second* under the bridge
- ...2.5m tonnes in 24 hours



## Land use

- Come dawn, the true horror of the storm came to light
- The devastation was horrendous...
- ...a tragedy for the people and the land



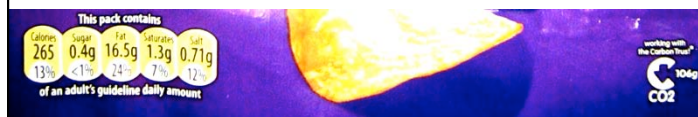
## Land use

- The resulting flood waters, made worse by poor land conservation, wreaked havoc on farms, towns and landscape and infrastructure
- 62,000 landslides covering an area of 18,000 ha in total
- All up, 29,000 ha of hillside were severely eroded
- In 48 hours, 200m tonnes of top soil, the life blood of sheep and beef farms, was washed down the regions' rivers out into the Tasman Sea.



## 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



## 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 opportunity

- 1 litre of milk = 940 gm of CO<sub>2</sub> equivalent
  - (According to the lifecycle analysis of milk by Fonterra, processor of 90% of NZ's milk, and a world leader in the global dairy trade)

**16,000,000,000 litres = 15,040,000,000 kg of CO<sub>2</sub> eq**

- 15.04m tonnes of CO<sub>2</sub> eq per year is not a waste product, or a liability

**Helping animals digest their feed better  
so they produce fewer emissions, more energy  
would help close the nutrient cycle**

**This a brilliant business opportunity...  
healthier cows and soil...**

**= more food, better environment, bigger profits**

## Role of NZ government – overseas

- **Global Research Alliance on Agricultural Greenhouse Gases**
- Proposed by NZ government at Copenhagen in 2009...to:
  - Reduce emissions; increase food production
  - Help developing countries to join global climate change frameworks
- Alliance now has 36 countries + 3 observers including the EU
  - = 70% of global agricultural GHGs; agriculture = 15% of total GHGs
- Three main workgroups:
  - Livestock, led by NZ and Netherlands, 483 projects identified to-date
  - Croplands, led by US, 429 projects to-date
  - Paddy Rice, led by Japan, 60 projects to-date
  - Secretariat: NZ
- Successful Ministerial Summit in June
- What it means to NZ:
  - Bedrock science for us; our biggest international science collaboration
  - Government has committed NZ\$45m over four years 2010-13

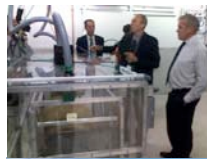
## NZ Agricultural Greenhouse Gas Research Centre

- New ways of working
- ...on science; on collaboration, NZ and globally
- ...on engaging with farmers

Pastoral Greenhouse Gas Research Consortium

- Since 2002, 50/50 government and industry
- \$30m investment in science so far

- NZ Agricultural Greenhouse Gas Research Centre
- Opened March 2010; \$48.5m funding next 10 years
- Four main workstreams...\$15.6m committed 2010-14
- Mitigate methane; mitigate nitrous oxide; increase soil carbon; deliver farming solutions



The Centre's role is to find ways for New Zealand to meet its international greenhouse gas emission obligations without reducing agricultural output.

## ETS impact on farming

- Animals should be activated in the ETS in 2015, the government's latest review of the ETS recommended
- ...and get the same 2-for-1 deal of all other sectors and extend that for 3 years
- ...to reduce the financial cost
- But government says it will delay ag

Emissions Trading Scheme  
REVIEW 2011

DOING NEW ZEALAND'S FAIR SHARE  
Emissions Trading Scheme Review 2011 / FINAL REPORT  
CONSULTATION DOCUMENT (2010-2011) / 11 JULY 2011



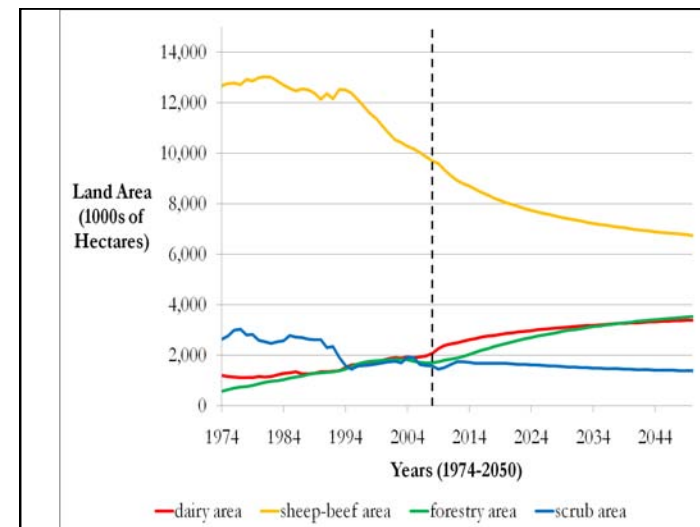
Types of participants	2012	2013	2014	2015	2016	2017	2018	2019
Agriculture ETS participants receiving agricultural allocation	\$0	\$0	\$0	\$1.3	\$1.4	\$2.0	\$2.7	\$3.5
Highly emissions-intensive, trade-exposed ETS participants receiving industrial allocation	\$1.3	\$1.8	\$2.5	\$3.3	\$3.5	\$3.8	\$4.0	\$4.3
Moderately emissions-intensive, trade-exposed ETS participants receiving industrial allocation	\$5.0	\$6.9	\$8.7	\$10.8	\$11.0	\$11.3	\$11.5	\$11.8
Other ETS participants receiving no allocation	\$12.5	\$16.8	\$20.8	\$25.0	\$25.0	\$25.0	\$25.0	\$25.0

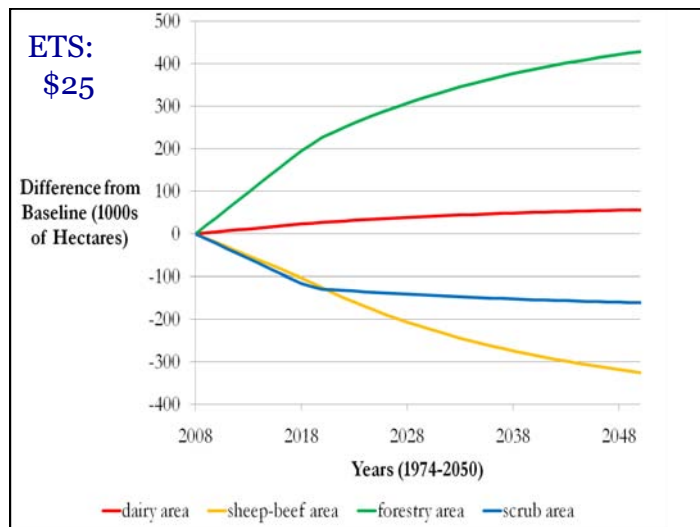
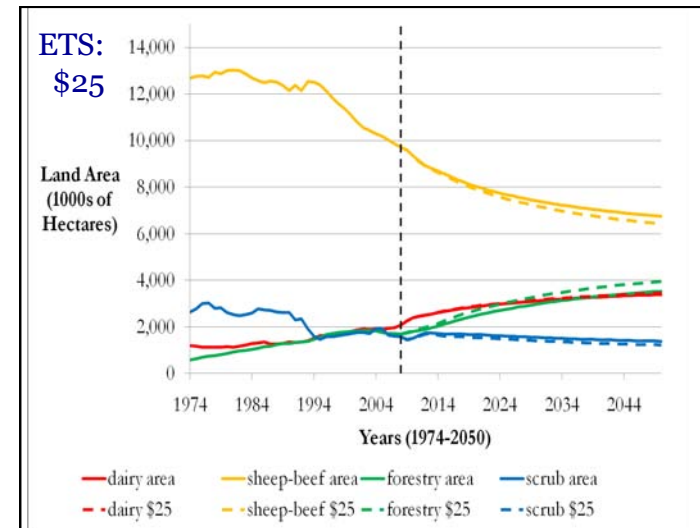
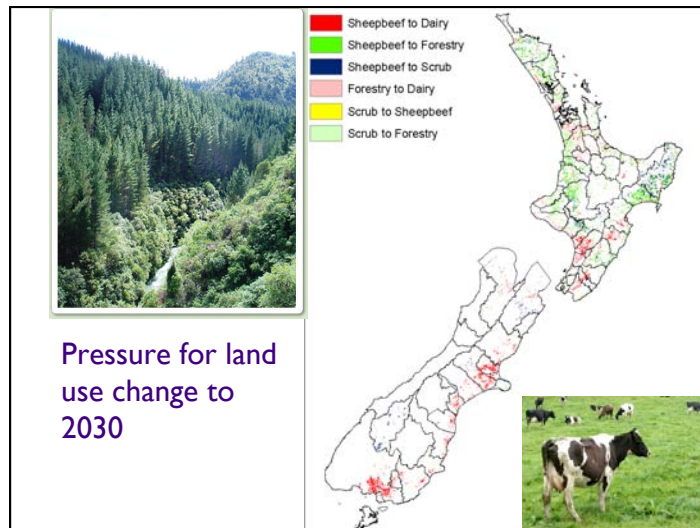


Table 10.3: Summary of impacts on farmers (assuming a \$25 carbon price)		
	Status quo	Panel's recommendations
<b>Average dairy farmer's expenditure on energy and obligations</b>		
2013	\$6,700 pa	\$4,400 pa
2015	\$9,900 pa	\$8,300 pa
2016	\$10,200 pa	\$8,400 pa
2017	\$10,500 pa	\$9,200 pa
2018	\$10,800 pa	\$10,100 pa
2019	\$11,200 pa	\$11,200 pa
<b>Average sheep and beef farmer's expenditure on energy and obligations</b>		
2013	\$2,400 pa	\$1,600 pa
2015	\$5,500 pa	\$3,900 pa
2016	\$5,800 pa	\$4,100 pa
2017	\$6,100 pa	\$4,800 pa
2018	\$6,400 pa	\$5,700 pa
2019	\$6,700 pa	\$6,700 pa

## Costs in context

- Sheep and beef:
  - MAF model farm accounts 2010-11:
    - ETS cost 2013: \$1,600 (electricity and fuels)
    - ETS cost 2015: \$3,900 (electricity, fuels & animal emissions)
      - ETS = 1.7% of working costs; 2.7% of pre-tax profits
    - ETS cost 2019: \$6,700 (electricity, fuels & animal emissions)
- Dairy:
  - MAF model farm accounts 2010-11:
    - Revenues: \$1.15m
    - Farm working costs: \$576,403
    - ETS cost 2013: \$4,400 (electricity and fuels)
    - ETS cost 2015: \$8,300 (electricity, fuels & animal emissions)
      - ETS = 1.4% of working costs; 2.4% of pre-tax profits
    - ETS cost 2019: \$11,200 (electricity, fuels & animal emissions)





## Fonterra's strategy

- 4.4m milking cows; 19% of agricultural GHGs; 25% of exports
- **Progress:**
  - 13.9% cut in energy emissions per tonne of product over last 8 years
    - Its plants began using ETS discipline in 2006
  - 8.5% cut in agricultural emissions per litre over past 8 years
- **Goals:**
  - 10% cut in ag emissions per unit of production by 2013 is NZ dairy goal
  - 30% cut by 2030 possible Fonterra believes...
    - "There is no debating the opportunity. We have a head start on some of our competitors." See Andrew Ferrier at [www.climateandbusiness.com](http://www.climateandbusiness.com)
- **Strategy:**
  - Pricing ag emissions would cost average farm \$22,000 a year
  - So, don't activate ag emissions in the ETS
  - If they were, production would fall here...rise in higher emission country

• *But its argument is deeply flawed*

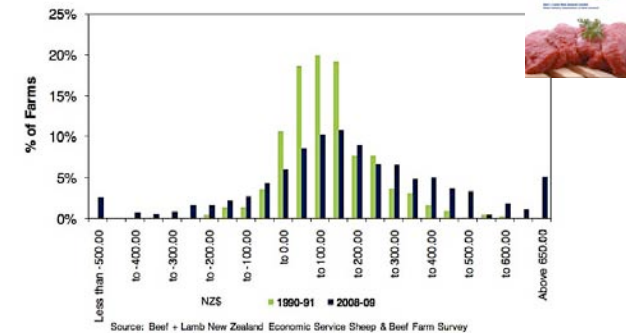
## What's really at stake

- Fonterra: ETS will cost average farm \$22,000 a year
- **Fact:** - No it won't; the industry will get free carbon credits to nullify impact
  - Cost will be \$8,300 in 2015 for the average farm
- Fonterra: ETS will cut production here
- **Fact:** - No it won't; more land will go into dairying
  - Dairying will become more intensive, so more emissions efficient
- Fonterra: What happens in NZ is significant to global industry
- **Fact:** - World dairy output grows each year by more than entire NZ output
- Fonterra: We don't need the discipline of ETS...we'll do this anyway
- **Fact:** - The ETS and gov't oversight will keep dairy industry focused
  - These new disciplines drive new analysis, insights, science & tools
- **Fonterra must lead...** it can drive these emissions & productivity gains better than any other global producer
  - It buys one-third of its milk overseas
  - Its ramping up farming overseas

## Sheep & beef profitability

- Can the ETS improve farm profitability?
- Yes...through efficiencies on farm and premiums in market

Figure 24: A changing sector profile in farm profit per hectare



## The road to sustainable dairy farming

- The International Dairy Federation began looking on to climate change issues a few years ago
  - Leaders within it include Fonterra, exporter of 90% of NZ's milk... and David Homer, an IDF board member and UK dairy farmer
- The IDF's 2010 World Dairy Summit was in Auckland last November
  - 2,250 delegates from 30 countries
  - Sustainable dairy farming was one of the conference streams
  - ...attended by 250 farmers and scientists
  - ...upbeat assessment of science, environment & business opportunities
  - Some of the delegates responses follow...



## Is human activity contributing to global climate change?



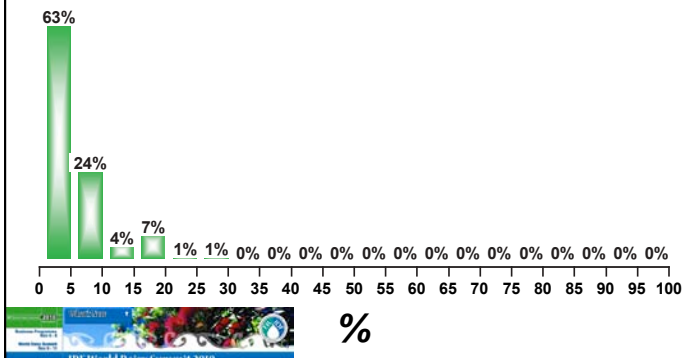
Is dairy farming contributing to global climate change?



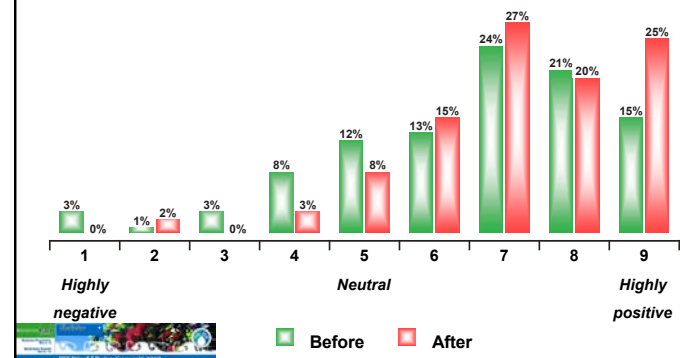
From what you've heard today, is dairy farming part of the climate change solution?



As a consumer, how much more are you prepared to pay in percentage terms if you know the products you purchase are sustainably produced?



How do you rate sustainability as a driver in your farming business?



Will you...



## Agenda

- World
- New Zealand
- Opportunity
- Paradox
- Un-strategy
- Strategy
- Imperatives
- **Advantage**

## Our advantage

- In a world where one product, one country looks ever-more like others...
- ...we stand out for our innovative, practical, leading approaches to issues
- An example:
- Our pavilion at the Shanghai World Expo last year was very distinctive
  - ...and in many lists of Top 10 "must see" pavilions
- Expo's theme: "Better City, Better Life"
  - China investing in new technology, materials, energy sources so many more people can enjoy higher living standards
  - Our pavilion featured NZ's very distinctive urban lifestyle
- In these sorts of ways, we're starting to reap the same rewards from responding constructively to climate change





