

New Zealand forestry: a visit to a Gypsy fortune-teller's colourful caravan

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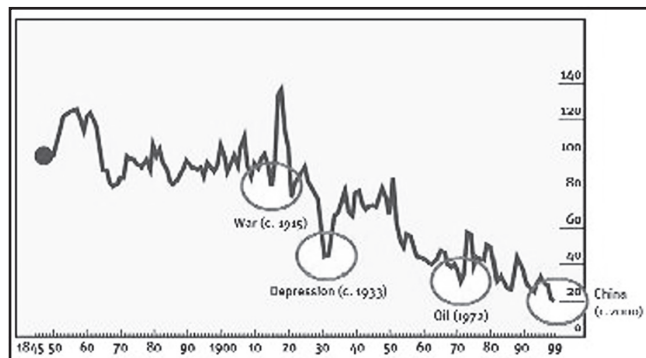


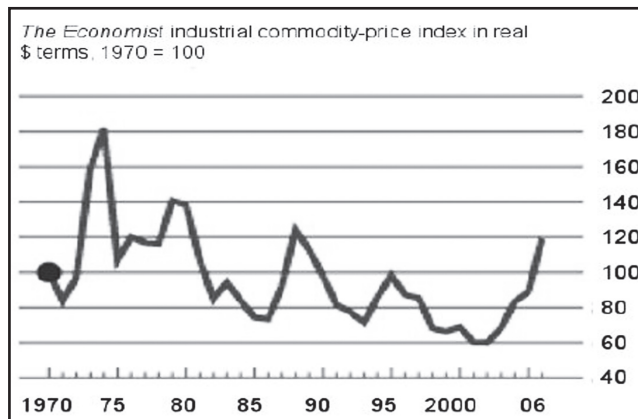
Figure 1. (a) *The Economist* commodity-price index adjusted by US GDP deflator (1845-1850 = 100). The long-term trend is down (inflation adjusted). Superimposed on this are significant periods ranging from 5 to 20 years when prices go counter-trend. (b) Subsequent data, rebased from 1970. In the 1970s NZ forest interests were projecting a 1-2% real increase in the price of lumber.

(1) Commodities: sharply rising demand constrained by limited capability to supply

The Economist magazine published a leader "Drowning in Oil" on 8th March 1999 when crude was around \$10/barrel. Further at year-end 1999 *The Economist* updated its long-running commodity index (Figure 1a) that again highlighted the impression of resource abundance. While commodity prices declined between 1980 and 2000, concurrently the NASDAQ began its long climb from a price-to-earnings ratio (P/E) of 13 at its beginnings to a triple digit multiple of around 350 at its peak in March 2000 - after adjusting for the cost of insider stock options. Parenthetically, most of the 25-fold capital gain from technology stocks came not from great earnings but from multiple upward revisions of P/Es. In contrast, in the current decade commodity prices are on the rise (Figure 1b) whereas valuations in the broad market are in decline (lower P/Es) led by a deleveraging of finance. Commodities are countercyclical to the broad market.

Back in 2000 it was an understandable, wishful view of analysts that commodities faced a bleak future (Figure 1a), with the best to be hoped for being opportunistic forward sales when beneficial coincidences briefly revive the scene. Ironically, until very recently, the CEOs of most major commodity producers thought likewise: the CEOs of all resource companies - including forestry - knew what a relentless, gradual decline *felt* like. They had *lived* with it for 20 years.

Even today, across commodities, there is no rush for greenfield investments. In this decade oil has moved from US\$10/barrel to \$120; copper from 60c/lb to \$3.50; potash from \$90/ton to \$750; wheat from \$3/bushel to \$9. Paradoxically the appropriate supply response has been



to consolidate by way of takeovers on the stock market, to remove bottlenecks in existing operations, and only cautiously to contemplate modest selective investments in a few compelling greenfield projects. This is despite the struggle to meet demand. The analysts' assumption of cheap resources was (and remains) absurd, because of supply constraints, a consequence of the run-down state of the infrastructure and resurgent resource nationalism:

- The greatest opportunities lie in high-risk, politically-demanding countries (Angola, Congo, Kazakhstan, Mongolia, Nigeria, Russia, Venezuela) or in areas that are off-limits to major western companies (Iran, Myanmar, Sudan). For example in the case of oil, Gazprom's Russian reserves are secure whereas for anyone else their reserves in Russia should be heavily discounted.
- "Difficulties" with such countries rise exponentially with higher commodity prices: even a stable place like Alberta has unilaterally changed its rules (*Our Fair Share, Report of the Alberta Royalty Review Panel 2007*), and furthermore is proposing 5-year reviews of its royalty structure - to be reset at whatever level the global economy can afford.
- Weak prices in the 1990s were the result of the collapse of the Soviet Union that triggered the release of 50 years of accumulated strategic stockpiles together with a sharp reduction in domestic demand.

Today, even if companies wish to expand production, after two decades of disinterest there isn't the skilled labour, machinery, drill rigs, steel pipes, or service providers to respond to new demand.

Oil and mining stocks need reserves. But as with forests, analysts have attached so little value to long-life reserves such that companies are reluctant to go out and find a resource, prove it up by drilling, go through all the regulatory hurdles to develop and bring it into production. Typically this takes 10 years during which time only costs appear in the company ledger - and at the end of which

there is the belief that prices will have collapsed again or some new non-negotiable royalty regime will be imposed. Further debt finance for prospective operations is made more difficult as it is assessed on the basis of *current* very high development costs (labour, materials, energy) while heavily discounting *future* revenues: often bank loans will be conditional on selling forward part of future production at prices that are well below current prices. There will be little new investment in commodities until the futures curves to move from backwardation (lower prices going forward) to contango (higher prices the further out one goes along the futures curve) amid fears of resource shortages and rising inflation. Only higher future prices will convince companies that long-delayed returns on capex will grow (rising commodity prices) rather than vanish (falling commodity prices). Until then, the overall result will be deferred or reduced investment in new production that pushes the supply-side response further into the future. This will prolong and sustain high commodity prices for another 10 years, as will a US recession.

Instead, it is wiser to buy existing capacity by way of a takeover, paying premium prices for producing, long-life operations in politically secure parts of the world. For similar reasons Asian interests are keen to participate on both sides of the trade, scouring the world for investments, partners and long-term contracts: to manage overseas supply lines, and so secure a cushion with physical, uncallable upstream “hedgies” against inflationary upstream prices. In many industries connections are being made or deepened, e.g. with Codelco in Chile and Campanhia Vale do Rio Doce (CVRD or Vale) in Brazil. The failed Fletchers-CITIC partnership offered a NZ producer a place in a dominant supply chain and our absence is not good for NZ Forestry Inc. This demand for resources from Southeast Asia and elsewhere is entirely conventional. They are seeking to catch up with

the same consumption patterns of developed countries and to provide the same basic facilities and services needed by any functioning community or society:

- Transport - roads, bridges, airports, ports, public transport, railways
- Energy & utilities - electrical power, water, sewerage, waste disposal, oil/gas production & storage
- Public infrastructure - schools, health facilities, public housing, government buildings, prisons
- Communications - cable & fibre optic networks, telecommunications, TV & radio, satellite systems

The rising prices of industrial commodities after 2000 (Figure 1b) are driven by such massive infrastructure investments, by housing for an emerging middle class throughout Asia, and by these people’s desire for consumer goods. This demand is squeezing all Asia, which pays the full US dollar increase for oil, metals and wood whilst being less able to pass on those price increases in finished goods, especially when exporting. Intense competition means that operations move from Taiwan to China to Vietnam to Cambodia. For the next few years this duality of price settings ought to be great for NZ forestry. We are on the right side of the new rule: to produce what Asia needs to buy rather than what Asia produces. There is more competition in semiconductors and computers - threatening shrinking profits - than in basic materials.

Only in the last 12-18 months have agricultural commodities found a strong market, although for NZ forestry this has yet to eventuate. Greater demand and higher prices are here for some time. The old view on grains, for example, was that prices rose only in response to local crop failures, yet the US has had one good year after another for 17 years. Today’s high prices reflect new demand rather than

Table 1. World supply of major crops, livestock and products (USDA Economic Research Service, *Agricultural Outlook, Statistical Indicators January 2008, Table 23*). Alternate years have been omitted.

	1999/00	2001/02	2003/04	2005/06	2007/08
	Million tonnes				
Wheat - production	585.8	581.2	554.4	621.5	603.0
- year-end stocks	208.5	201.6	132.4	147.6	110.9
Coarse grains - production	877.7	894.1	916.0	977.8	1051.6
- year end stocks	232.8	198.3	140.9	164.6	125.6
Rice, milled - production	408.9	399.3	391.5	417.6	420.6
- year end stocks	143.5	133.6	82.4	76.9	72.5
Beef & pork - production	132.2	134.6	140.6	148.6	149.2
Poultry - production	53.2	57.9	59.9	64.6	68.0
Milk - production	383.0	394.4	409.6	421.4	435.7

a failure to supply - even after incorporating the drought in Australia. It is a measure of how fine balanced the global grain market is that prices have doubled in the face of static production. Rising fortunes - in Latin America, East Asia and India - have meant that more people are eating more meat and dairy products with the result that the global carryovers of all grains are the lowest on record in relation to global consumption (Table 1). Note that the most rapid run down in year-end stocks (1999-2004) preceded interest in ethanol. It is ironic that after 20-30 years of stagnant prices, just when farmers are enjoying decent returns, governments are intent on pushing prices down, to redistribute their gains with the more numerous urban poor. Around the world there is a return to autarky with Argentina, Brazil, Egypt, India, Russia and Ukraine, among others, imposing export taxes or quotas on grains and meat, to prevent local prices rising. This is the complete opposite of European protectionism where the aim has been to keep out cheap agricultural products.

The world is changing. For years the agricultural policies of Europe and North America have been about protectionism and the management (dumping) of their surpluses, on the presumption that shortages were local, in response to local droughts and wars. Also until recently, low income limited the ability of many people to obtain healthy food. With countries in Asia - home of the majority of the world's population - experiencing dramatic, sustained economic growth, more people are increasingly able to afford more and better food: it is estimated that one-third of each additional dollar earned in these countries is spent on food as people switch from starch-based foods to protein-rich diets (Potash Corporation of Saskatchewan, 2007). Further, demand for food - and energy - is less susceptible to a recession than is discretionary spending.

(2) Food inflation is the new story

Inflation is coming from food rather than oil and industrial commodities. Raw food prices will continue to rise faster than inflation until crop yields in Africa, Asia and South America approach North American and European yields. This inflationary impact is serious because in many countries food is rarely taxed so rising agricultural costs pass directly and immediately to the consumer, e.g. egg prices rose 80% in India in 2007, while food CPI in China is up 16%. In contrast fuel cost subsidies protect their poorest citizens to a degree. Food price rises have a huge impact because they account for 34% of China's CPI, 30% of India's, but only 14% in the US. Rising food prices are very visible and political. Ironically, "core" CPI in the United States (as in many countries) explicitly excludes food and energy (deemed too volatile), so US consumers will be spending more on what core CPI does not measure but what people want: food for their waistlines, heating for houses, and petrol for cars.

Rising incomes enable people to eat healthy, less monotonous foods. This broadening of diets from just

grains and vegetables to include a little meat and dairy products multiplies grain consumption as it takes some 7 kg of grain to produce 1 kg of beef, 4 kg of grain for 1 kg of pork, and 2 kg of grain for 1 kg of chicken (PotashCorp, 2007). Most significantly in China consumption of meat has tripled in the last two decades from 22 to 81 million tonnes and is forecast to reach 106 million tonnes by 2017 (PotashCorp, 2007). Rising demand for grains requires a supply-side response but there is little new land available. The set-aside schemes of previous agricultural policies in Europe and North America - to reduce agricultural surpluses - are unlikely to be overturned as they have formidable NGO constituencies arguing for the retention of wetlands and wild life reserves. At the margin, FAO sees 23 million hectares of abandoned land in the Ukraine that can be brought back into production - land that in the time of the Czars made Russia the largest exporter of grains whereas under Soviet rule that country could barely feed itself. Equally problematic, PotashCorp (2007) identifies Brazil as having as much as 170 million hectares of its Cerrado region [dry scrubland in its Midwest] available for crop expansion. Such lands will take a decade to bring into production, meanwhile...

...If there is little new land then more intensive production must be the solution. To boost the yield per hectare, to make the land really productive, requires improved seeds, more fertilizers, drainage/irrigation and technology. The PotashCorp (2007) anticipates increased demand for its fertilizers: "*China, for example, needs to more than double its annual potash consumption to achieve scientifically recommended applications*" and "*India's decades-long pattern of fertilizer under-application is even more pronounced than China's...*" Yet supplies of fertilizer are heavily constrained. Canada, Russia and Belarus, the largest potash regions, struggle to meet demand. Further, no greenfield projects - which take 5 to 7 years to build - have been announced despite profit margins of \$100/tonne in 2006, \$200/tonne in 2007 and conceivably \$500/tonne in the near future (PotashCorp, 2008).

At its heart demand for grains is driven by prosperity (59% for food, 36% for feedlots, 5% for ethanol). Interest in renewable biofuels impacts only a little, with ethanol production expected to double and biodiesel to triple by 2010 - with corn being used for ethanol production in the US and China, with sugar cane being used in Brazil and India; and with biodiesel from palm oil being used in Indonesia and Malaysia. Ethanol from corn has a miserable energy-return-on-energy-invested and a list of other deficiencies. However the US has mandated increased production (7.5 billion gallons by 2012) to reduce dependence on imported oil, so ways will be found to keep ethanol production viable despite high corn prices. Local ethanol also attracts the blending credit (a federal tax credit of 51c/gallon designed to keep out cheap Brazilian ethanol). Ironically one opportunity in the US lies in adapting the digesters of defunct but fully permitted kraft pulpmills.

(3) Valuing resources

Despite such promise, commodity companies are still valued primarily on the basis of their current earnings with future revenues being heavily discounted on the presumption of falling prices. High commodity prices at the top of the cycle in the late 1970s and early 1980s beguiled New Zealand foresters to make the “reasonable” assumption of model output prices rising 1% pa. Such optimism in part accounted for the planting boom - to be met with disappointment and subsequent bust. One can legitimately advance the same argument today but with more confidence, as it is earlier in the commodity cycle and the strong demand from the developing regions is more sustainable. A 1% pa rise in price as against a fall of 1% pa has a significant impact on the valuation of forests. Further, if you accept the inflationary argument - at least with regard to resource companies for the next 10-15 years - then they should be valued rather as strategic assets on the basis of the longevity of their unhedged reserves in politically-secure areas of the world: Canadian oil sand companies have reserves that stretch out 50-100 years; PotashCorp has 100 years of reserves in Saskatchewan; plantations have an indefinite reserve life provided soil fertility is maintained, whereas for natural forests supplying China estimates range from > 20 years for the Russian Far East, 10 yrs for Indonesia, 13-16 for PNG, 10-15 for Burma/Myanmar and 4-9 for Cambodia (White *et al.* *China and the Global Markets for Forest Products*, 2006). These numbers are similar to the reserve life indices for the big Western oil companies of 12-15 years that are disturbingly low.

Spot prices are subject to two pressures - the demand for physical commodities and the pull/drag of higher/lower prices along the futures curve. Even now, rising spot prices are not yet niggling at the unimpeachable virtue of supply-chain managers who restrict themselves to just-in-time inventories, since the consensus doubts that higher prices will endure. Ever higher prices and tighter credit provide an incentive to run down stocks further making the system ever more vulnerable to supply-side shocks. While commodities, other than corn and wheat, are in “backwardation” (whereby they are offered at lower prices on the futures market) conditions remain unconducive to hoarding and speculation since stocks can be replaced by ever cheaper stuff. However once inflationary psychology catches hold in a new era of supply/demand imbalances and disruptions, then holding inventory will again become fashionable: 35% of Exxon’s profits came from inventory gains in 1979.

The high price of grains has been bad news for feedlot owners in the US who have been killing their livestock. Inevitably, low international meat prices will be followed soaring prices in a few months, promising better times ahead for New Zealand grass-fed cattle and sheep.

(4) Whither forestry?

Forest products differ from agricultural commodities where rising demand reflects a wish for a better diet. They differ from industrial commodities in that abundant spare capacity can cool prices. The problem is that there is no real shortage of timber: forests are part reserves part inventory so demand can be met immediately and opportunistically anytime anywhere from fragmented owners throughout the world. But what is all this wood needed for?

Brian Easton’s column in the New Year edition of the Listener noted “*growing affluence gives consumers choice. They are acquiring ‘experiences’ rather than buying more things. The latter - conspicuous consumption - may remain important for status but often the additional spending is on a holiday, or on an exceptional meal.*” Consumerism is more that consumption. It reflects cultural, ethical and social perspectives. People in emerging economies have had enough ‘poor experiences’ and are more concerned with accumulating essential things. Hence GDP in China and India is some five times more resource intensive than is the US and Europe (BHP Billiton 2008).

Such contrasts parallel ideas elaborated in Prof SAM Adshead’s *Material Culture in Europe and China, 1400-1800: the rise of consumerism* (1997). Early European visitors agreed China was the richest country in the World and that what was described was not a Third World, but an alternative First World. Some differences that Adshead noted include:

“*The Europeans made a radical distinction between the life cycles of clothes and buildings. For the Chinese, they formed a continuum: longer for dress than the Europeans, shorter for shelter, but all of a piece. The Chinese had one dimension in their temporal orientation. The Europeans had two. The Chinese sought to hold the middle ground from one generation to another, seeking neither to master the moment [a silk dress] or to achieve eternity [a stone house].*” It is ironic that Americans no longer see the home as an intergenerational asset but rather as an ATM that until recently feed as much as 40% of consumer appetites, whereas modern Chinese are busy saving some 30% of their incomes.

“*When, in the mid-sixteenth century, Lu Chi wanted to defend extravagance against frugality as economically beneficial in aggregate, it was to food, dress and services to which he pointed rather than shelter... Implied in this choice were differences of temporal orientation: over what period should debt be amortized, what value should be placed on liquidity, what length of cycle was appropriate to this particular commodity. It was because of these implications that the building industry had such wide-ranging consequences for the economy as a whole. More than food and dress, shelter involved the future.*”

More surprising, *The Economist* (5/1/08) reported a similar cultural sensitivity in Japan. “*In post-war Japan land has value but buildings do not. The law separates the ownership*

of the land and the structure, so the two are distinct in Japanese minds... After around 30 years homes are demolished for new ones to spring up. Because the lifetime of houses is so short, cheap construction materials are used [Does that explain the ready market for radiata pine?] and the buildings are not maintained. There is no tradition of do-it-yourself home upkeep. Just as there is no interest in secondhand-furniture or clothes among the sanitation-obsessed Japanese, so too home-owners prefer to build anew rather than to refurbish the old". The proportion of old houses (> 40 yrs) in the housing stock is inevitably small after the devastation of war, while the pressing needs of the 1950s-1970s overrode exemplary building practices - the use of sea sand in multistorey complexes resulted in corrosion of the reinforcing rods. Also high humidity means a greater risk of decay and termites in Japanese houses.

How then might forestry contribute to modern societies, whether to the fads of fashion and the ephemeral or to the rebuilding of infrastructure?

Regarding the fads of fashion, Adshead offered an unpalatable answer. "If textiles were a bigger rival to bricks and mortar in China than in Europe, so too was furniture. In the sixteenth century, European furniture was still comparatively primitive and cumbersome. In China, on the other hand, the period 1550 to 1735 has been described as the golden age of classical furniture. Light and elegant, it made use of new, imported tropical hardwoods, notably Dalburgia from Vietnam and Hainan. Craig Clunas, in his account of Chinese connoisseurship in this period, notes that, 'fine clothes and fine furniture were an important part of the presentation of an upper-class persona of the world.' Chinese furniture of this period anticipated not only Chippendale, Hepplewhite and Sheraton in its sophistication, but Maples, Heals and Habitat in its functionalism. In China, furniture was an alternative to fabric. In Europe, the priority of masonry had been set before quality furniture appeared to rival it." To flesh out Brian Easton's observation, conspicuous consumption seeks beautiful hardwoods, the mass-market wants only cheap softwoods.

Obvious consumer benefits of improved shelf life and flavour for tomatoes or healthier high oleic acid soya oil are lacking in NZ pine forestry. Wood quality traits that are of most interest to processing intermediaries - checking, resin pockets, warp - are, at best, "givens" without which there is no future for our industry. The essential pull of the market for forest products must engage the desire for aesthetics - rich colours, figure, odour and natural durability - or at least contribute to environmental consciousness - carbon storage, drought resistance/low water use, rapid hydrolysis for biofuels and pulp, and soil conservation.

More prosaically if radiata pine is destined primarily for utilitarian purposes, how might it contribute to contemporary issues? The most obvious are global warming, energy/oil and water conservation, and in Western economies aged infrastructure. Tired or inappropriate infrastructure, the dulling of the suburban dream, and

inner city renewal offer opportunities: rebuilding the same basic facilities and services of a functioning society that Southeast Asia is building for the first time. The four-storey timber building initiative of the NZ government, in this context, should be one welcome component of this broader vision to create vibrant, denser population clusters around efficient infrastructural links. Such centripetal forces and the difficulties of sustaining sprawling suburbia will provide opportunities through which the timber industry can contribute to the design of safe, energy-efficient lifestyle options - options that people will want and find increasingly attractive.

One challenge is to lift our productivity/profitability. For agricultural crops Monsanto (2008) sees a combination of genetics and fertilizers doubling yields by 2025. The same is achievable with plantations in Brazil, implying a MAI of 100 m³/ha/yr. Then again long-awaited carbon credits can work in unusual ways. In Brazil, AcelorMittel is greening its steel production, using charcoal from its eucalypt plantations rather than coking coal as both fuel and reducing agent: further north, Vale has large *E. camuldulensis* forests for the same purpose. Despite Brazil being the world's largest exporter of eucalypt pulp, a greater volume of its plantation roundwood goes into charcoal production. Is this a reversion to primitivism? Not on your life! Spot prices for thermal coal and for coking coal (used to make steel) have tripled and quadrupled respectively in the last 12 months. With 80% of steel used in construction being recycled compared to 50% of pulp, green steel is as compelling a concept as green forestry.

(5) Great grouses

The prosaic hurdles that NZ forestry faces - exchange rate, transport and energy costs - are inter-related.

The exchange rate. International prices for forest products have trended up since 2001 but the high NZ dollar against the US dollar has taken much of the benefits that would have accrued to forest exporters and redistributed them to provide a comfortable cushion for consumers and importers (Table 2). A lower, more appropriate exchange rate is inevitable (but not anytime soon) since New Zealand last had a current account surplus in 1973 and the deficit is

Table 2. In this six-year period the Australian and New Zealand dollars have risen by over 80% while the Canadian dollar and Euro have risen by over 55% against the US dollar. The US dollar remains overvalued.

... vs the US dollar	1/10/01	1/10/03	1/10/05	1/10/07
NZ dollar	0.4065	0.5946	0.6915	0.7574
Euro	0.9096	1.1665	1.2019	1.4262
Australian dollar	0.4920	0.6809	0.7624	0.8874
Canadian dollar	0.6339	0.7408	0.8600	1.007

currently around 8% of GDP. Forestry would thrive at 60c exchange rate, but the pain would be very broadly spread across society. The high NZ dollar subverts all our actions.

Transport costs. Strong demand for bulk carriers - for coal, fertilizers, forest products, grain and iron ore - will underpin high freight costs for the foreseeable future (Figure 2). At the turn of the century a third was more than 20 years old, these being built in the early 1980s in response to the last commodity revival. These are being decommissioned. Shipping and shipbuilding have not been stellar businesses. To justify new shipping these industries need to rebuild profit margins and need to pass on higher material costs.

Figure 2. Baltic Dry Index. Few ships were built during the commodity bust between 1980 and 2000. The most recent sharp breakdown anticipates a recession, but the BDI is still far higher than in 2001-2002.



In its 2004 Annual Report CHH observed that “CHH is a family of some 17 different businesses built around wood-fibre manufacturing... subject to uncontrollable factors such as foreign exchange and freight rates.” This was a feeble excuse, indicative of a lack of imagination. There is a smorgasbord of business models to address such issues: conglomerates, vertical integration, a functional business model etc... and a synthetic or hedged company with business security through investments in energy, or shipping. Such a strategy would bring more security than building further wood processing plants or currency hedging, i.e. if shipping is a concern, then buy into a shipper or a Korean shipyard.

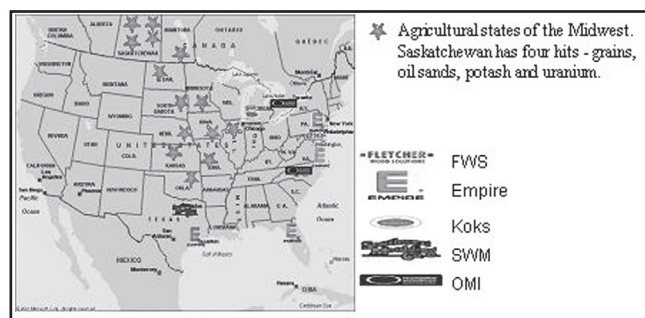
Energy costs. For example in August 2003 Pierre Lassonde, CEO Newmont Mining, reviewed their strategy. “Eighteen months ago we took the view that oil would go past \$60 and stay there for ten years. We asked how to insulate Newmont from these high prices. We burn three million barrels a year, which represents about 20% of our production costs. We elected to hedge by purchasing 7% of Canadian Oil Sands.

Their reserves were valued at \$26/barrel. At \$50/barrel oil, we anticipate a dividend of about \$10/share; at \$65/barrel about \$14/share. The dividends will cover all increases in our oil-related production costs, providing us with a hedge for the next 50 years, because their reserve will last that long. We’ve taken very aggressive action to hedge our long-term operations against the adverse cost impacts of rising oil prices”.

Integration. Another example, CVRD (Vale) sustains its iron ore business with its own hydropower, forests (charcoal for smelting the ore), mills, rail, and port infrastructure. Such structural hedges provide the long time horizon that is lacking in a conventional currency hedge.

NZ forestry companies ought to consider taking a position in those businesses that could do their industry the most damage. While it is not too late to implement such strategies this is unlikely because NZ forestry has become a branch office affair. Instead, the industry will have to muddle through. Further, without vertical integration, forestry is subject to offshore businesses that reach back to maximise generation of wealth for their own shareholders. They will rationally pay NZ forest owners only those prices that are necessary to achieve their objectives. Such companies have no incentive to pay more. Clearly the small grower - who accounts for 50% of the harvest - will be most vulnerable. In this respect Tenon has done an excellent job in implementing a viable supply-chain - linked to the United States. Tenon’s future is as a distribution and warehousing operation in the US, with its NZ operations “merely” being an important supplier of radiata that substitutes for ponderosa pine for speciality millwork products; at the same time, Tenon draws on South American manufacturers to offer its customers lower cost commodity finger-jointed mouldings and primed boards.

Figure 3. Tenon group locations are not well placed with regard to the new rural prosperity in the Midwest - the Saudi Arabia of corn - where prosperity that is not tied to home ownership and over-stressed lenders.



Two negatives temper the promise of this strategy. Tenon’s 2007 Annual Report quotes from a recent but obsolete Harvard Joint Housing Study (released February 2007) to justify healthy annual growth in remodelling spend in the US housing market over the next decade. At the same time Tenon’s Annual Report skated over some darker consequences of the recent sub-prime fiasco - a bit

naïve as years of financial excess cannot be unwound so quickly. The pain will be spread right across that society as this is the first recession led by housing. This recession is different: because it is financially driven, because stimuli by the Federal Reserve have pushed real yields into negative territory, because there is no inventory to correct as in past recessions (US inventory/sales is only 1.24 months), and because companies need to hoard skilled labour due to the drop in the birth rate in the early 1970s. Second, other than Texas, Tenon is not logistically well linked to serve the Midwest that is the only part of the US likely to prosper in the next few years - from the bonanza in agriculture (Figure 3).

(6) Producing what China and the World wants

Politics dictate that contented cities need their amenities and will have the first call on available resources - energy, food and water.

Energy and paper. China's dilemma is how to meet its energy demands without excessive pollution from burning coal. Imports of aluminium, steel, and pulp/paper rather than bauxite, iron ore and logs are purchases of embodied energy. Almost all the new papermaking capacity in China is based on recycled fibre. This mimics the success of the electric arc furnace minimills of the 1970s when scrap metal gave minimills a 20% cost advantage over the large integrated mills at the bottom end of the market, e.g. concrete reinforcing rods etc. They were enormously profitable until they drove the integrated mills out of that market at which point prices collapsed, obliging the minimills to produce progressively better steel in order to capture new markets, so squeezing the integrated mills to ever more demanding customers. Eventually the integrated mills ran out of high margin markets to flee to... So to for papermakers.

Buying recycled paper offers the advantage of low capital costs, low energy, reduced pollution as well as cheap fibre. The largest export by volume from the USA is scrap - metals, minerals and recovered paper (Table 3). In 2004 some 12.8 million tonnes of recovered paper were exported including 5.9 million tonnes to China. Similarly, Australia is exporting 1.1 million tonnes of recovered paper (State of the Forests Report, 2008), not all to China. This is equivalent to 3 to 6 million cubic metres of export logs (for TMP

and kraft pulp respectively) embodying some 3 MWh of electrical energy per tonne of pulp if from mechanical pulp and some 10-40 m³/tonne of clean water if derived from kraft pulp, while also being largely carbon neutral. The upward drift in the prices for the collection of old containerboard and newsprint in the US suggest a practical limit to paper recovery of around 50%, at which point the long suffering wood pulp producers will benefit from higher prices.

Water. China must contend with a very limited water supply. The country's per capita water supply is a quarter of the global average, and is mainly in the south. Further, Chinese agricultural interests face one hard economic fact, namely that the same amount of water that can produce one tonne of wheat with a market value of \$500 can create \$14000 of goods when used by industry. Equally attractive is the proposition that every tonne of rice arriving dockside embodies with it, in virtual form, between 2000 and 5000 tonnes of water (Fred Pearce, *When The Rivers Run Dry*, 2006).

Food. China faces an on-going demand by consumers for more protein. One approach would be to import more feedstock grain. Another way would be to import more meat: as recently as 2003, imports accounted for only 3.5% of meat consumption. Further, farmers are switching from grains (from 92 to 80 million hectares) to more labour-intensive cash crops (from 12 to 22 million hectares of vegetables). In 2007, Chinese exports accounted for about 12% of global trade in fruits and vegetables.

Forestry. Two-thirds of China's production is for local consumption. The main timber products that are exported are furniture and wood-based panels. China accounts for over 30% of the world's furniture trade to complicit mass markets in the US and Europe where demand is for cheap wood-based products with no questions asked. However by placing itself in the middle of the global forest products supply chain it has become increasingly vulnerable to problems associated with its wood supply (as buyers become sceptical regarding illegally sourced wood) and to changing buyer preferences and trade regulations. The modest reserve life indices for much of its most poorly documented wood supply, and the severe export tax by Russia on legally exported logs ought to encourage fractionalisation of its furniture market in favour of certified and sustainable wood

Table 3. Recovered paper (FAO Forest Statistics). The United States exports 30% of its recovered paper, China imports an equivalent amount from around the world. FAO has only collected such data since 1991. Data for alternate years have been omitted.

Recovered paper (million tonnes)	1992	1994	1996	1998	2000	2002	2004
Production USA	30.5	31.0	31.0	41.1	43.3	41.6	43.1
Exported USA	5.9	7.0	5.8	7.3	9.9	10.3	12.8
Production China	7.6	10.4	11.4	12.0	15.8	17.0	16.9
Imported China	2.0	2.2	3.1	3.1	4.9	8.0	12.7

from countries such as New Zealand. Indeed if China is to initiate something post-Kyoto, it is more likely to move in favour of sustainability of forest operations by its overseas suppliers than in any tempering of its core needs for energy beyond what is self-evidently in its own best interests.

(7) End-game

Of the crises confronting everyone, food and water are the most pressing, then energy, and lastly - and less immediately pressing - climate change. These crises are feeding the return of inflationary expectations after 20-25 years of stagnant commodity prices. These crises are predictable because of:

Strong agricultural demand. In the past agricultural policies were centred on the the management of surpluses; about local failures due to drought or war; about tariffs such as that in the United States against Brazilian sugar-based ethanol simply because it is a staggering five to eight times more efficient than that from corn. Today global demand for food and animal feedstock is effectively immune to recession whereas agricultural supply is about available land, water and technology. Today it is about the switch from rice and bread (boring) to dairy products and meats - even in India. In contrast, ethanol from corn is a fad, but that does not mean it doesn't have legs: only McCain of the presidential candidates declined to contest the Iowa Caucuses, saying that corn ethanol was nonsense. It may yet be junked in favour of sugar from Brazil.

Strong demand for construction materials - including wood? Growth is no longer on the East and West Coasts of the US and in Europe where the demographics are even worse than in the US: fewer children and teenagers. Despite everything, in industrialized countries the replacement of worn out infrastructure will offer some demand, on top of the rebuilding of vibrant, denser population clusters. However real growth lies in dynamic, developing economies.

Peak oil production. Big oil has few friends - anywhere - and is facing falling reserve life indices, but at the same time it is hard to see a significant increase in World production as this has become sensitive to inefficiencies in Angola, Mexico, Nigeria, Russia and Venezuela.

Consequently commodity prices will remain strong for at least the next 10 years. Even forest products should get a lift. So for NZ forestry the mantras of today should be:

- To produce what Southeast Asia wants and not what it sells; where our export can be priced according to the vitality of those fast-growth economies.
- To take positions in businesses that could do the most damage to the profitability of NZ forestry.
- To develop new engineered systems that allow wood to contribute better to sustainable urban renewal.

- To seek species diversification for more discerning consumers, through exceptionalism.

New Zealand is the only Southern Hemisphere country relying solely on pine, and the preoccupation with our failure to develop a prosperous pine industry has distracted government and forest sector from other opportunities. *"It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage, than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who would gain by the new ones"* (Niccolò Machiavelli). Our melancholic response - the most deadly being procrastination: *lame faith leads understanding blind* (Andrew Marvell) - can be attributed to the ease of growing and processing utilitarian pine with little downside risk compared to the preconceived (but soluble) complexities of growing and processing eucalypt - complexities that are more than offset by the market-driven aesthetic and environmental benefits of speciality products. Truth can be partial and slippery: in which inappropriate, judgemental criteria and past failings distort current perceptions whether of pine or eucalypt. A nation's bright future is its youth (new species, new breeds); its responsibility is to its aged (the existing forest resource). Intergenerational theft thwarts change.