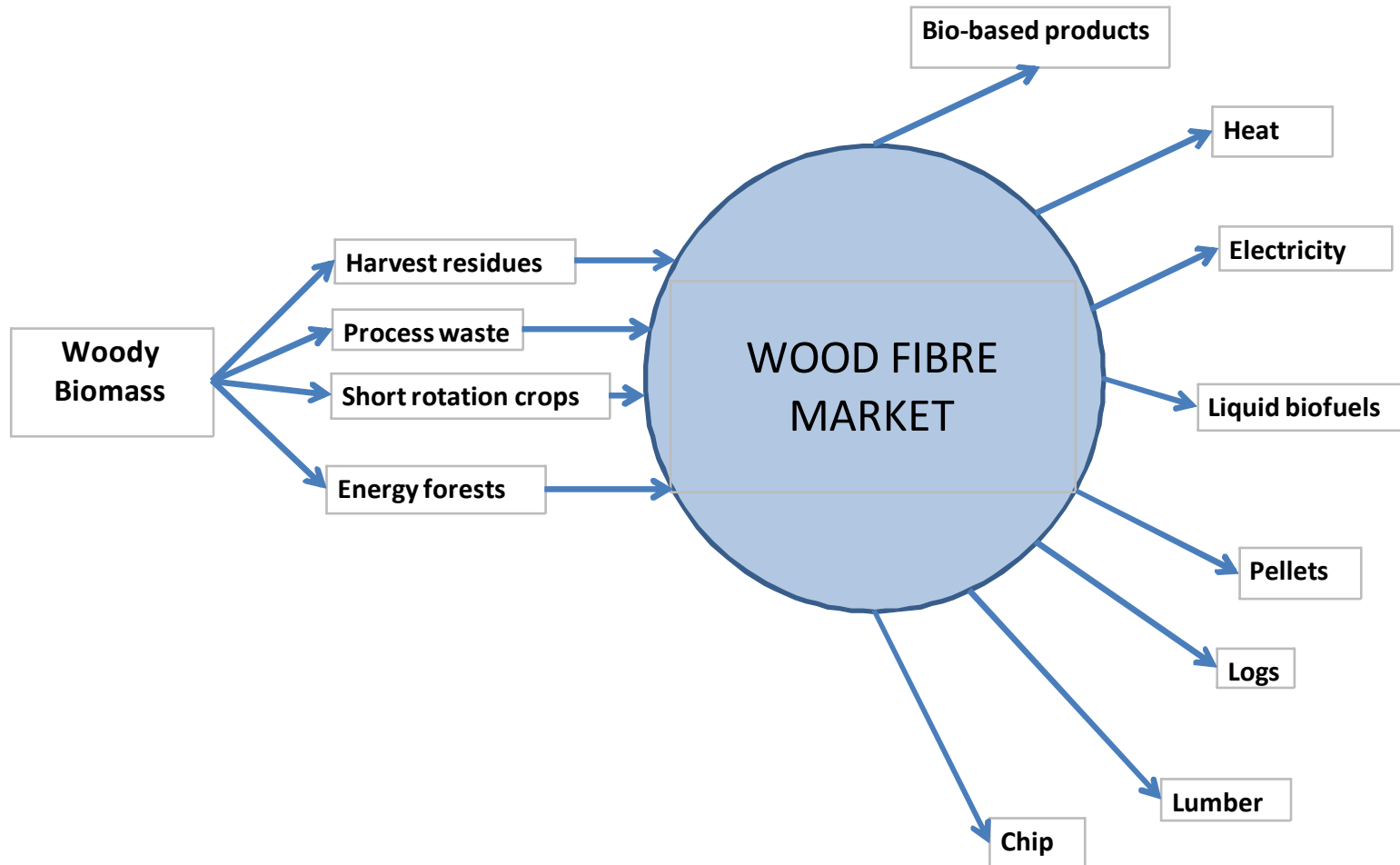


Investor Demand for Wood Fibre?

BANZ Workshop
February 2010

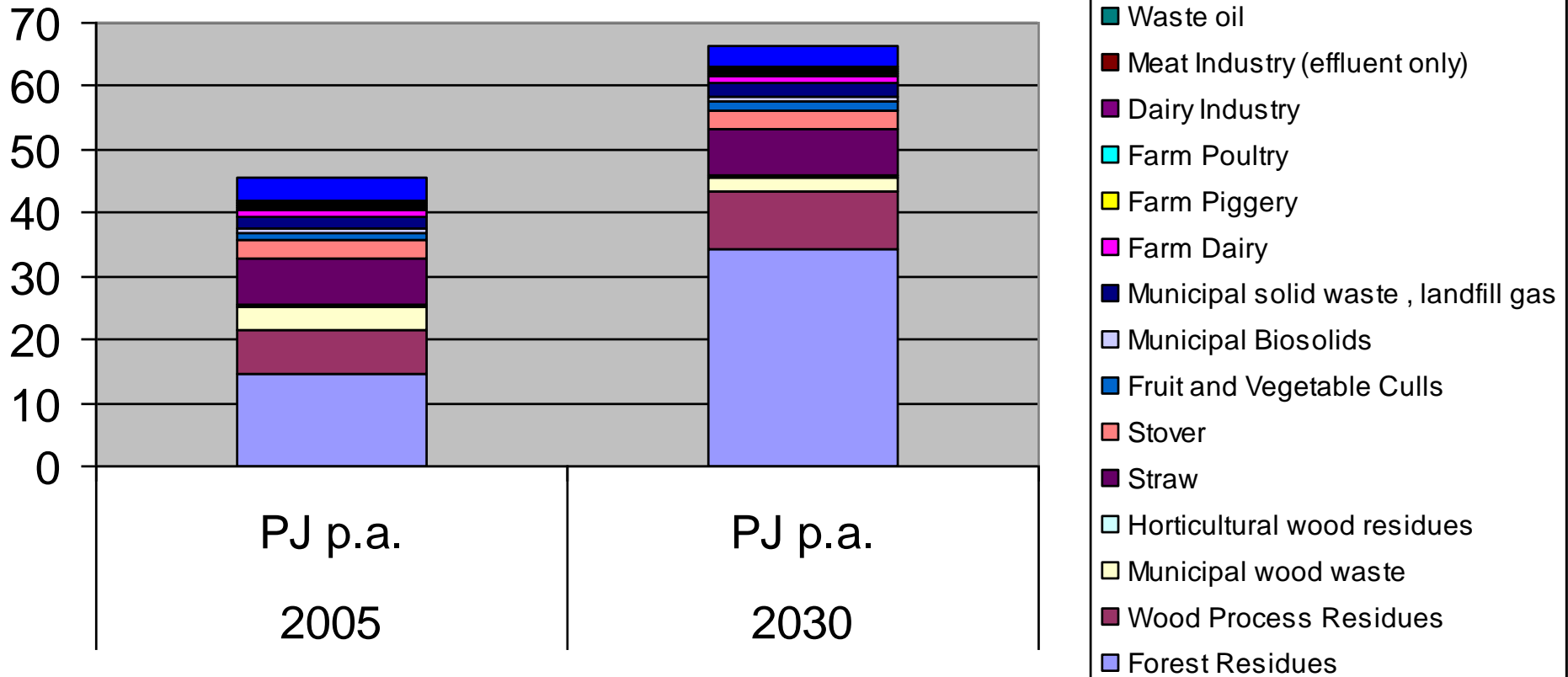
Grant Smith

Conversion of Woody Biomass

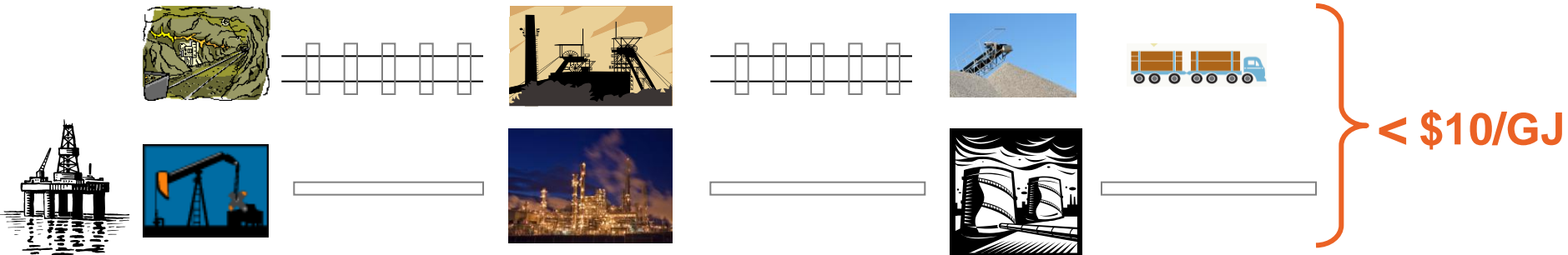
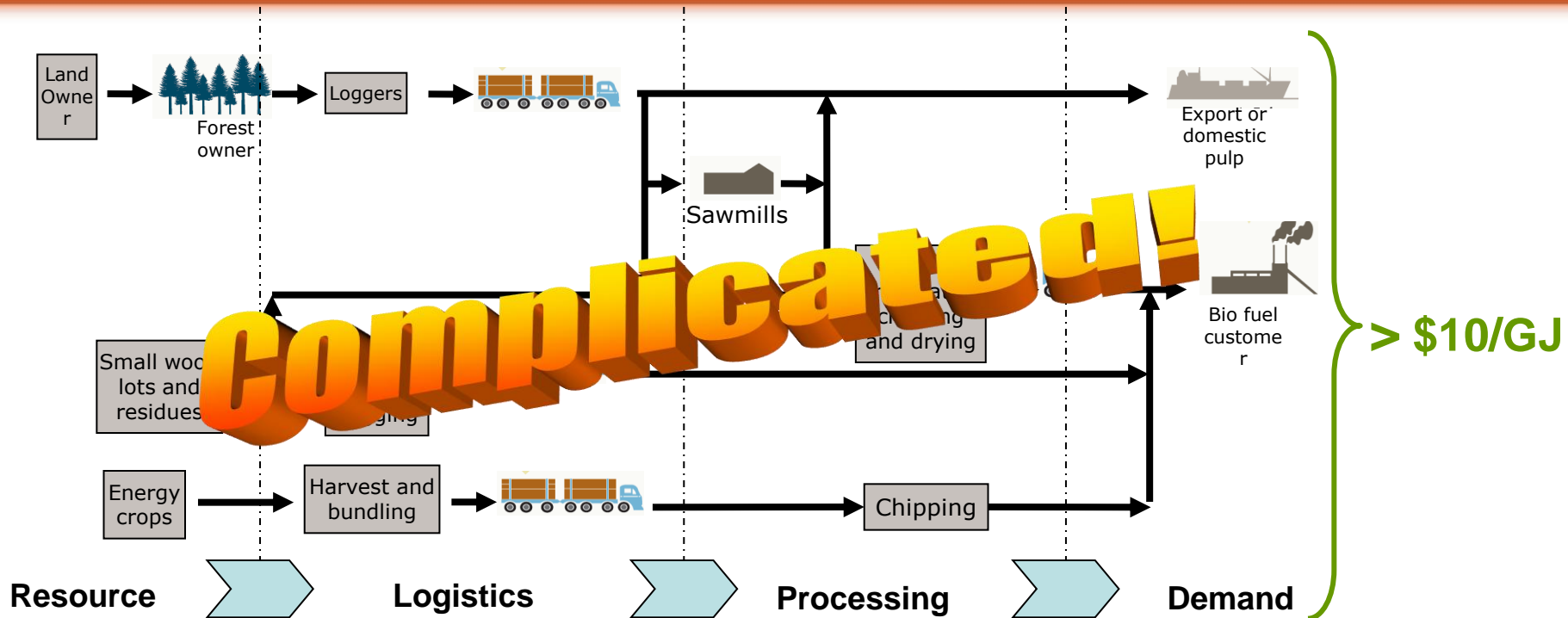


Source: BANZ DRAFT Strategy Paper 2009

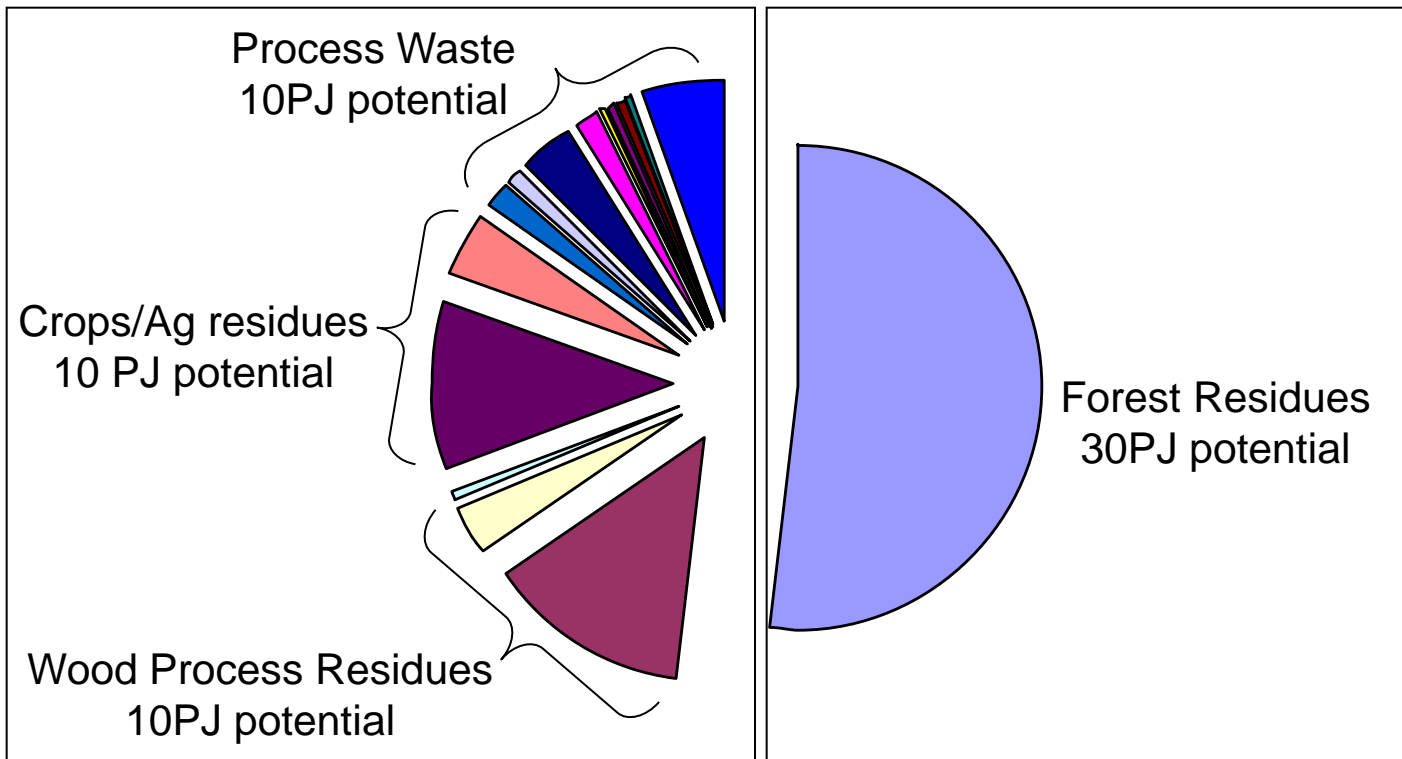
NZ Consumer Bioenergy Potential



Energy value chains



NZ Consumer Bioenergy Resources



- Forest Residues
- Wood Process Residues
- Municipal wood waste
- Horticultural wood residues
- Straw
- Stover
- Fruit and Vegetable Culls
- Municipal Biosolids
- Municipal solid waste, landfill gas
- Farm Dairy
- Farm Piggery
- Farm Poultry
- Dairy Industry
- Meat Industry (effluent only)
- Waste oil
- Tallow

Source: Scion 2007
BANZ Strategy Paper 2009

Locally Valued

Supply Chain Led

Globally Valued

Export Markets Led

Primary Fibre Markets

Fibre Investments

- Pulp products
- Wood products
- Raw logs
- Chemical products
- Energy products
- Raw fuel
- Other uses

Export Market Led

Value of Energy Fibre?

Supply Chain Led

Primary Markets

Wood Fuel Pellets
??PJ

>\$30/GJ

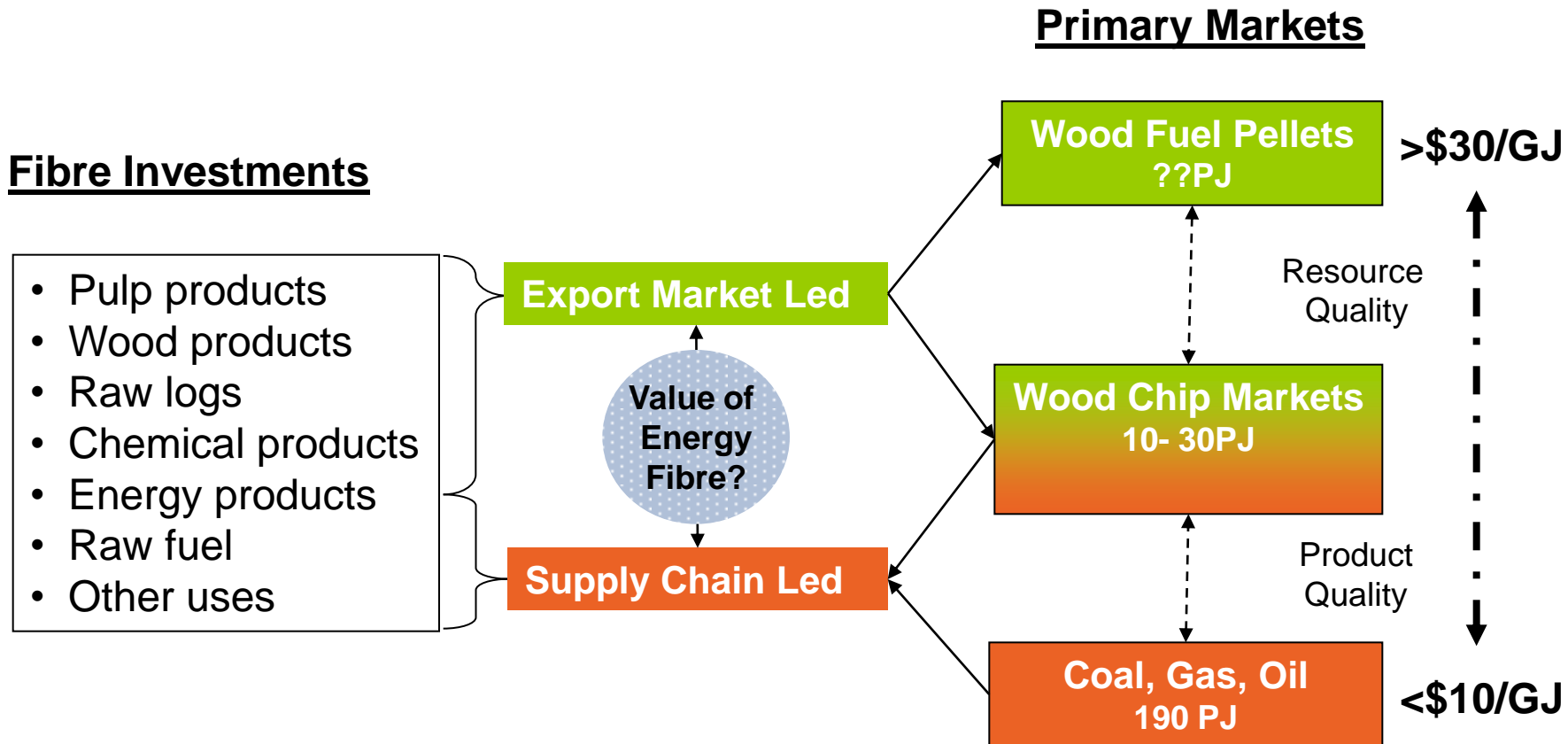
Resource Quality

Wood Chip Markets
10- 30PJ

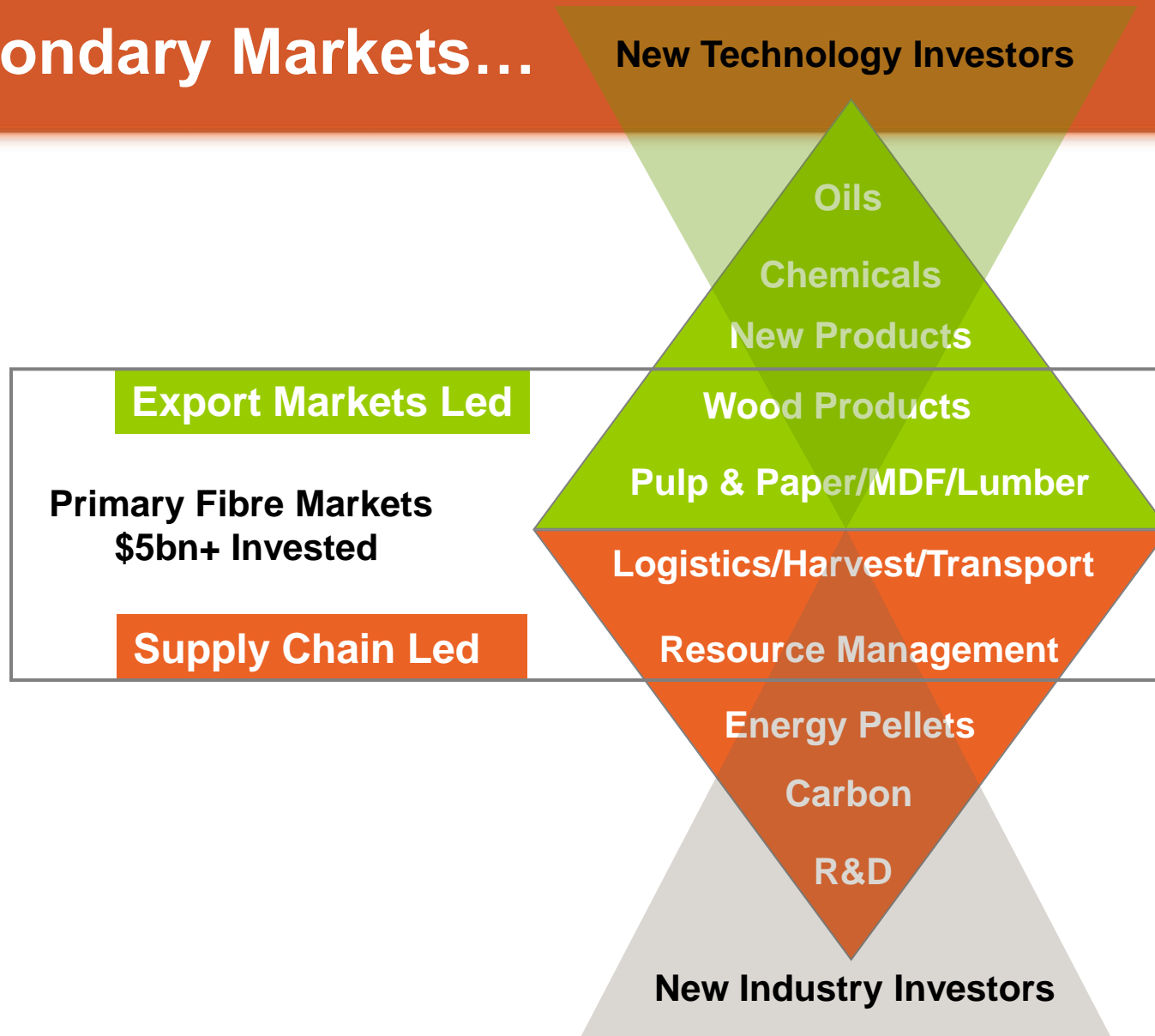
Product Quality

Coal, Gas, Oil
190 PJ

<\$10/GJ



Secondary Markets...

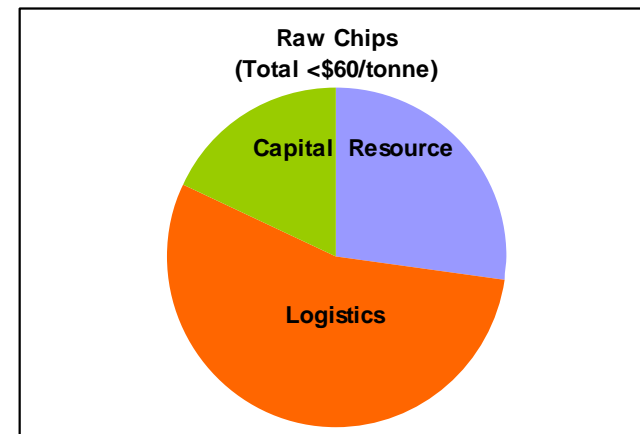
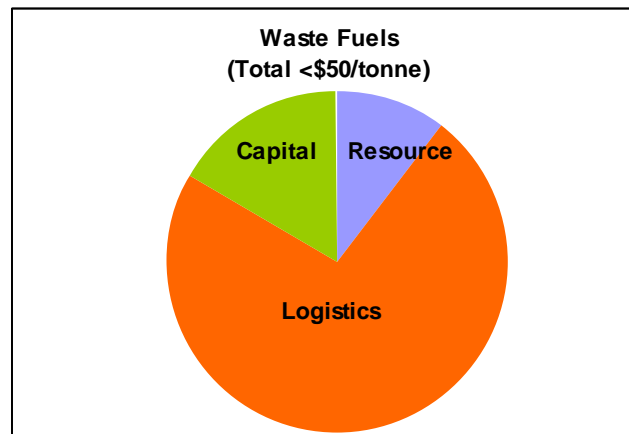
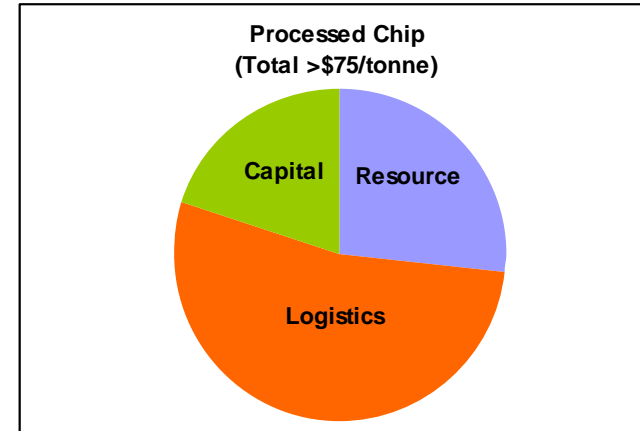
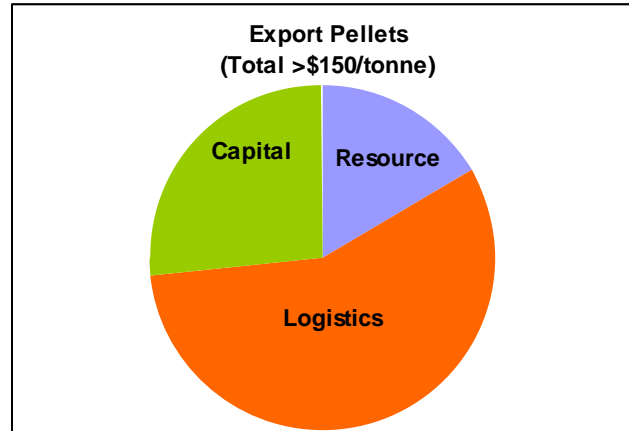


Relative Bioenergy Production Costs

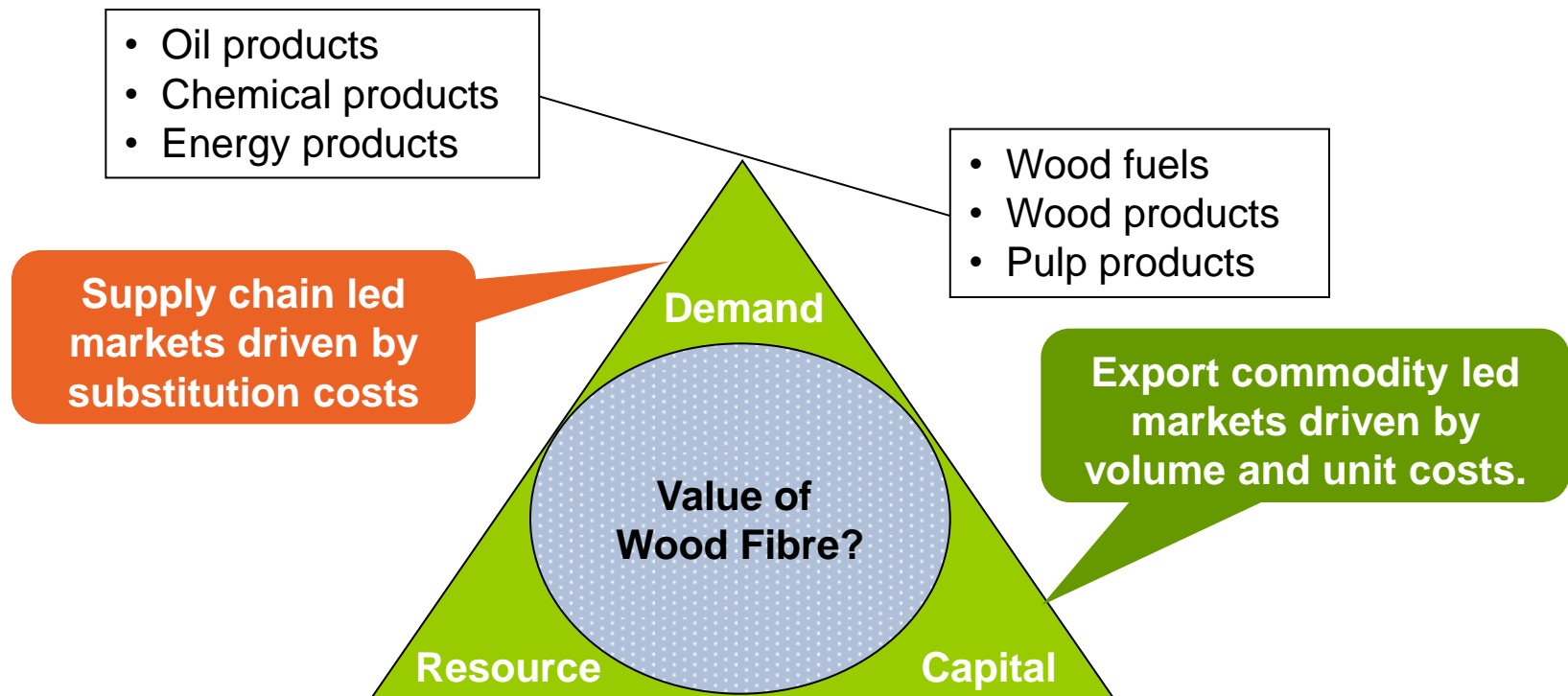
Logistics costs covering the recovery, transport, processing, storage, handling are economically more important than the resource fibre value

When the relative value of the resource is proportionally higher, it's more likely the forest industry would engage in the energy markets

Otherwise demand or prices will need to be high relative to their current fibre markets.



Valuing Wood Fibre Markets...



Conclusions

- Investment needs are relatively modest for local supply development, estimated to be less than \$100m to recover 30PJ, or up to 5% of NZ energy market demand. Local logistics and delivery cost risks are therefore likely to dominate the investment decisions. i.e. 10% risk on these costs could kill the capital returns unless recoverable in the supply contract pricing mechanisms.
- From a local energy market perspective therefore, bio-energy investments sit in the niche, higher delivery risk category, and need to achieve higher than average industry returns.
- From a forest industry perspective the bio-energy resource market value, without export product subsidies, is not yet enough to warrant a major shift in their capital assets base.
- Pellet exports or liquid biofuel investment profiles and their business delivery models that are not well suited to existing energy sector businesses, which generally have lower WACC of the investment markets. The export pellet markets need to attract entrepreneurial interest, with access to global supply contracts that accommodate local logistical cost risks.