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Attracting Investors to Bioenergy – the New Zealand case study

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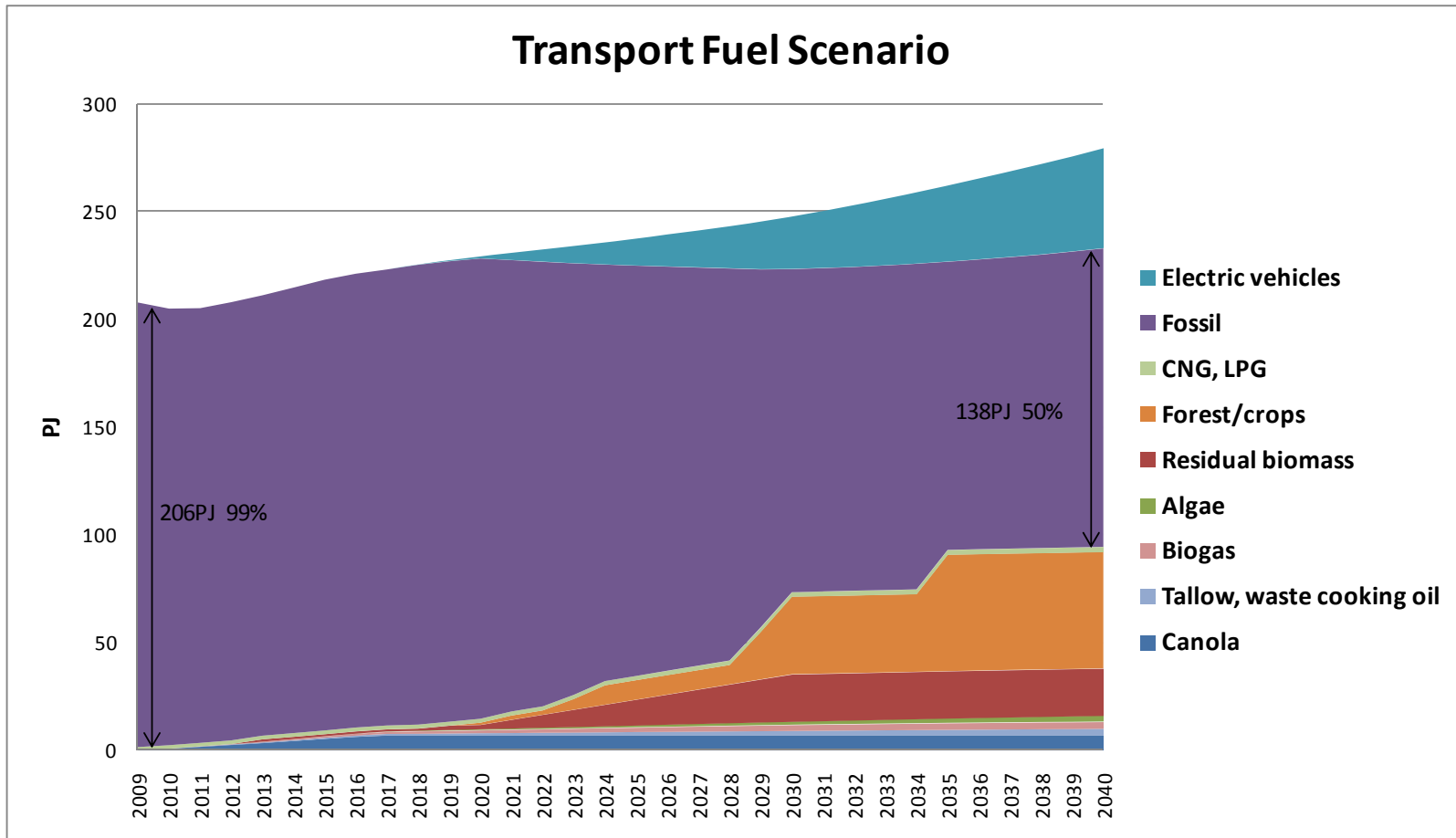
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Having a vision of the future

New Zealand biofuels



The bioenergy market

- ***Wood fuel production for heat***
 - Wood chips / general wood fuel
 - Wood pellets
- ***Liquid biofuels production and use***
 - *Current* – bioethanol from whey; biodiesel from canola, UCO, tallow
 - *Future* – bio-oil from algae, bioethanol from lignocellulose,
- ***Biogas production and use***
 - Waste water and municipal waste
 - Animal and food waste

Developments supported by the New Zealand
Bioenergy Strategy

Fitting within the national strategy?

The New Zealand Bioenergy Strategy

- Economic growth and employment
- Built on New Zealand's capability and expertise in growing and processing wood-crops and converting organic by-products to energy,
- Which by 2040 supplies more than 25% of the country's energy needs, (including 30% of the country's transport fuels), and export of wood fuel and biofuels

Bioenergy delivering national benefits and taking international opportunities

- Maximising wealth from natural resources
- Extracting additional value from existing wood, organic wastes, and diversified land use
- Maximising land value and opportunities
- Develop employment opportunities
- Economic growth from new energy crops
- Turning organic wastes into resources
- NZ products
 - Can help meet O'seas climate change commitments

Delivering the Strategy

FOUNDATION BUILDING PHASE: to 2015

- Extend current initiatives
- Continue research, but directed also to crops and biodiesel, including feedstock supply chain
- Establish business case for liquid biofuels
- Secure Government and investor support

DEVELOPMENT PHASE: 2015 to 2020

- Extensive planting of fuel crops and new energy forests
- First liquid bio-fuel plants committed
- Attract investors

EXPANSION PHASE: 2020 to 2040

- Progressive:
 - Fuel crop harvest increases
 - Introduction of regionally located liquid biofuel production plants
 - Reduction in CO2 emissions

A clear investment path

- Immediate action
 - Engaged wood/forestry sector at all levels
 - Landowners see the value proposition
 - Signals ensure investor confidence
 - BAU for current technologies is extended
- Longer term action
 - Create a community of interest and Government support
 - Promotion of visible international successes, eg Flotech, Lanzatech, Aquaflow, Carbonscape, Ignite, AES
 - Maintenance of science capability

...NZ is making a long term investment in bioenergy feedstock, technologies and its workforce

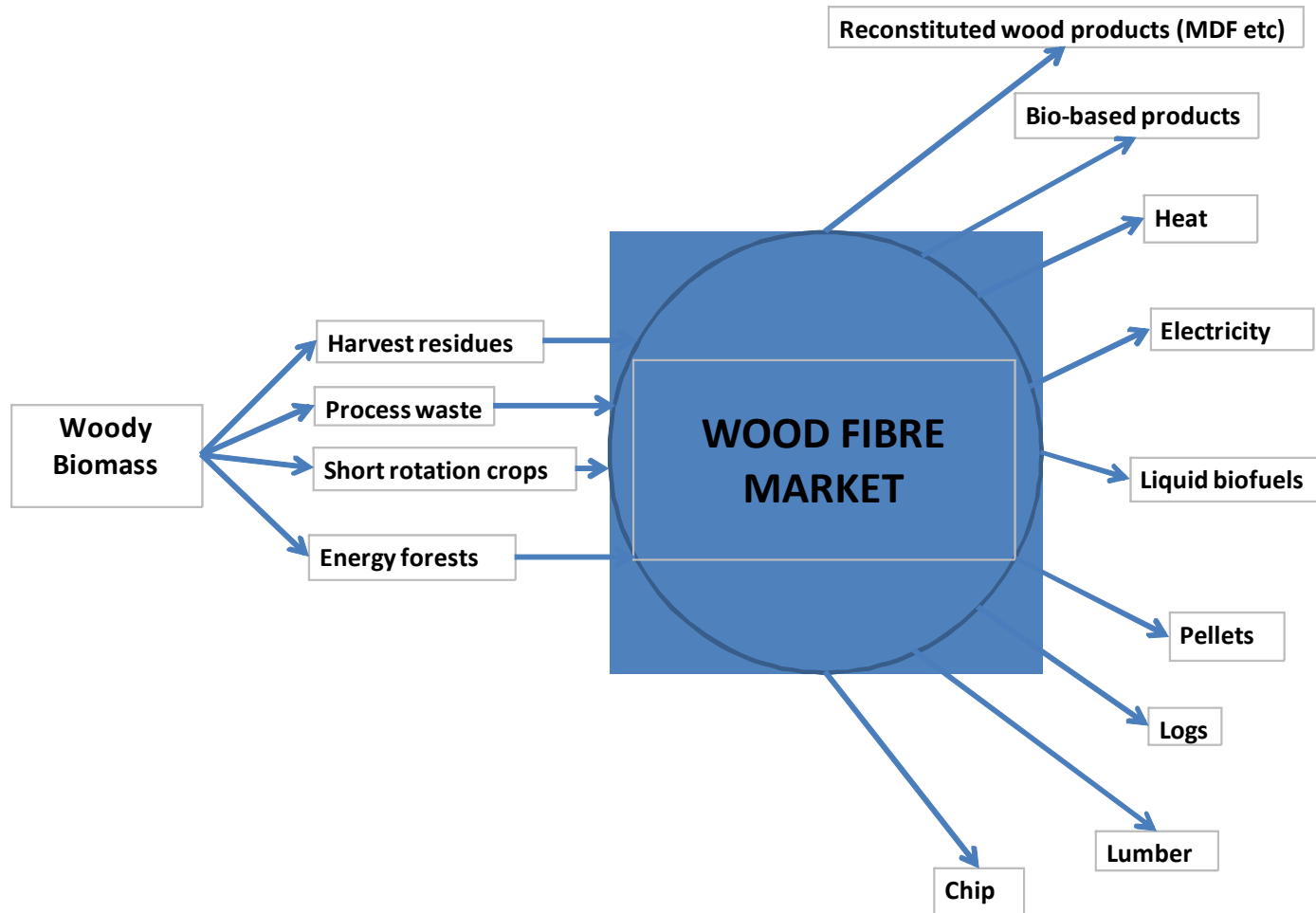
Understanding the driver's

- Reducing energy costs
- Security of energy supply for business
- Meeting energy /transport demand growth
- Sustainability and environmental positives
 - Carbon footprint
 - Meeting the Green Consumer demand
- Access to innovative and well developed workforce
- A good market to do business in
 - Integrity
 - Openness
 - Access to Free Trade Agreements

Product options

- What are the products?
 - Energy in the form of electricity, heat and transport fuel
 - Co-products in the form of chemicals, animal feed, pharmaceuticals etc
- Can we sell other benefits – waste reduction
- Subsidies and incentives
- Product market analysis

Risk management - multi products



Criteria for an attractive investment

- **Right People** - *Bring experience; can grow a company; know their limitations; can overcome any gaps*
- **Great Opportunity** - *Identified their niche; excellent returns (sound business model); customer demand; investors keen*
- **Market knowledge** - know the competition; understand barriers to entry; know your customers; roll-out plan – first sales
- **Sound technology** - feasible – metrics ; Step change (but appropriate for the sector); scalable; R&D plan addresses risks
- **Risk management** – identifying and assessing ability to manage risk, impacts of risk

Having the people

- A great idea will go nowhere unless the right people are behind it.
- Innovators are often not the people who take a good idea to commercialisation
- Can the investor bring the business skills and disciplines to augment the start up people
- Will the start up people welcome new comers
- How hands on should the investor be?

Managing risk

- Technical
- Economic
- Feedstok
- Market
- Product quality
- Operative
- Political
- People

Feedstock management

- All things organic from wood to residues we waste
- Names and resources we know – wood fuel (chips and pellets), bioethanol, cassava, palm oil, canola, corn, biogas, tallow
- Names and resources we are learning about – biodiesel, bio-oil, algae, miscanthus, salix
- Constraints on feedstock supply
- Flexibility of feedstock

Obstacles

- Technical challenges
- Resource limits
- Economic constraints
- Infrastructure roadblocks – (pumps, pipelines and people!)
- Distance to markets
- Consumer awareness / mindset
- The low cost fossil fuel competition
- Securing investment

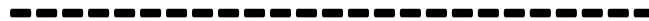
The investment stages

Champions

Stars

Innovators

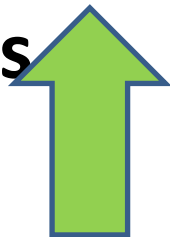
Serious Commercialization



Incubators

R & D

Latent



Establishing an investment plan

- A clear investment path – for the short and long term
- Maximise access to feedstocks
 - Current feedstocks
 - New feedstocks
- ‘Grow’ and utilise skilled workforce
- Sell your strengths/point of difference (when you know what it is!)
- Know your markets and use existing established ones
- Diversify where possible – spread the risk - for example
 - Canola = biodiesel for transport, for boiler fuel, for animal feed
 - Woody biomass = biofuel (ethanol), lignin, xylose
 - Algae = bio-oil/biofuel; wastewater cleaning process

The investment environment

New Zealand has:

- Educated, innovative workforce
- Unused but fertile growing land for energy crops
- Strong forestry/wood sector
- Extensive existing *Pinus radiata* plantation forests
- Significant potential to secure additional value from existing plantings by expanding bio based products
- Equable climate ensures high growth rates
- Experience/strength in renewable energy use
- Free Trade Agreements
- Long history of successful working in Asia

Market regulation

The New Zealand market:

- Commercially successful despite absence of subsidies
- Experienced in international collaborations
 - Dairy - Fonterra in the US and South America
 - Wood Pellets – Solid Energy in Europe
 - Bio-tech – Lanzatech in Asia; Flotech in Europe; Ignite in Australia; Carbonscape and Aquaflow in the US
- Few regulatory barriers / red tape – ‘easy’ to ‘do business’
- Geographical position enables easy entry to other local markets: Australasia, Asia
- Innovative and original approaches by necessity

Technical Expertise

- New Zealand has:
 - Long history of forestry / wood related developments
 - Solid investment in agricultural and process industries
 - Strong and well funded research sector
 - Experienced biofuel producers (ethanol from whey)
 - Innovation and leading edge solutions attracting world attention
 - Successful niche applications
 - Initiatives delivering outcomes with multiple benefits

What is an investor really looking for?

one word.....‘Certainty’

- **Feedstock** – guaranteed longer term supply contracts give the necessary confidence – removes the uncertainty and price fluctuation
- **Government Policy** (indicating a direction/support) – for at least 3 years
- **Cost of Capital** - ????
- **Markets** – investors want to see evidence of demand