Overview to New Zealand Bioenergy

Paul Bennett - September 2018
Content

- Overview to Bioenergy in New Zealand
- NZ Forestry Industry
- Feedstock Availability
- NZ analysis capability
Biomass mostly used in industrial heat in New Zealand, but new Government policy and targets:

- New renewable energy targets,
- Net zero carbon by 2050,
- One billion tree policy
One billion trees – Reclaiming our forest heritage

It’s about:

- Our environment
- Our regions
- Our people

It requires:

- Policy
- Seedlings
- Labour
- Land
- Infrastructure
- Processing/Products

It’s a 10 year programme:

Scaling-up to one billion trees over 10 years

- Additional planting enabled by the programme to date
- Additional planting the programme will need to deliver; approach for delivering the planting yet to be confirmed
- Baseline forecast of trees to be planted (including replanting)
- Average annual planting over 10 years

We’ll do it together:

- Commercial sector
  Base planting of 50 million/year projected
- Crown Forestry
  Lease or joint venture
  Existing and new foresters
  Commercial criteria
  Land size, terrain, accessibility
  Radiata crop
- Ministry for Primary Industries funding
  Afforestation Grant Scheme
  Erosion control funding programme
  Hill country erosion programme
  New grant mechanisms
- Coalitions
  Government departments, Māori and NGOs working together
- Skills and training
  Jobs
  Career pathways
- Regional Councils
  Catchment assessments
  Infrastructure
  Funding and partnership initiatives
  Riparian and gully planting
- Crown land
  Department of Conservation
- Community participation
  Schools, plant nurseries and farmers

We’ll plant:
Natives and exotics in traditional and innovative locations

February 2016
Forestry Information

- 1.7 million hectares Planted Forestry
- Currently 30 million M³ pa harvested
- ~100% FSC or PEFC
- 92% privately owned
- 90% Pinus Radiata

- NZ$6.3 Billion Exports (MPI 2021 prediction)
  - 50:50 logs:products

NZ Government initiative - 1 Billion trees programme
2x current planting rate

Over 50% as logs, remainder sawn timber, pulp and paper, wood chip
No major bioenergy product export, but interest
Biomass for fuel export potential

**Issues being investigated**

**Biomass feedstocks**
- Assessment of residue resources
- GIS based modelling of delivered volume and costs
- Forest crop modelling and assessment of biofuel crop options
- Residue recovery system assessment

**Densification of biomass**
- Pellets (only 2 pellet mills in NZ)
- Briquettes

**Torrefaction (and densification)**
Good understanding of residual resources

- National data sets
  - Forestry (NEFD, WAFs)
  - Municipal waste
  - Data from forestry harvesting operations on residuals

- GIS based landcover data (LCDb V. 1 to 4)
  - Forestry
  - Cropping
  - Orchards

Underlying data on area, age, location and yields allows estimation and modelling of the volumes of residuals based on the harvest volume and area
GIS Systems for feedstock delivery analysis

Integrate GIS model outputs (spreadsheets of volume by distance) with costing model outputs;
Develop cost supply curves for wood residues
Cost supply curves; - now & future

Landing residues to Gisborne; cost supply curves

$ per green tonne

Green tonnes per annum
Woody Biomass Availability and Costs

- Up to 3.9 million dry tonnes woody biomass
- Current costs range from -$40/te for municipal wood waste (landfilled) to $75/te for sawmill chip (feedstock for pulp mills)
- Cost depends on location (easy of extractability and distance to market/processing)
- Forestry waste (from harvesting) is largest proposition
- High quality sources, such as pulp logs and sawmill chip are in demand by pulp, paper, MDF and particle board manufacturers in most regions
Summary

- Woody Biomass is available, and expected to grow with One billion tree policy

- Limited wood pellets currently but expansion likely

- Policy initiatives encouraging more feedstock production and more bioenergy.