THE LIFE (& DEATH) OF FORESTRY RELATED INVESTMENT OPPORTUNITIES

INTEGRATING WOOD PRODUCT INNOVATION WITH FIBRE RESOURCES

LINKING FIBRE SUPPLIES TO VIABLE PROCESS TECHNOLOGIES

- Long-term sustainable sources of supply
- Realistic cost/GMT
- Consistent flows of fibre

DEFINING CONVERSION PROCESSES SUITED TO COMMERCIALIZATION

- must have a path to a commercial end-use
- without need for public/govt funds
- strongly supported by equity partners
- validated margins and manufacturing processes
- realistic logistics from forest floor to customer

BIG VS SMALL – THE VIRTUES OF DISTRIBUTED MANUFACTURING

- Fibre resources are, by definition, widely distributed
- A dozen modular process plants, each consuming 200,000GMT/year = 2,400,000GMT of fibre converted annually for 20+ years
- Smaller individual plants = faster implementation
- stabilizes investor performance

INVESTOR METRICS

- Well-defined fibre quality, price and sustainable quantities
- Strategic manufacturing partnerships (co-location)
- Replication/growth as end-use customer demand increases
- Access to energy infrastructure (gas, electricity)
- Validated sustainable harvest practices
- "Allocated vs Planned vs Committed" – the bottom-line major concern for any/all fibre supply related investments in Canada

CURRENT FOREST-RELATED INVESTMENTS UNDER CONSIDERATION

- "Next-gen" Wood Pellet Manufacturing
  - $20-40m each – two years to initial production
  - 200,000GMT/year needed from within 1 hr drive
  - 20+25 full-time jobs
- Integrated district heat/power
  - 5-6MW + distributed process and home/business heating – one year to construct
  - 50,000GMT/year consumed
- Co-located specialty bio-chemical manufacturing
- Biomass-to-H2 Production
  - $100-200m capital – two years to commercial startup
  - 200,000+GMT/year
  - 50+ new jobs

EXAMPLES OF POSSIBLE OPPORTUNITIES

- **chemical extraction** – liquid biopesticides (75gal/hr per module) - 50,000GMT/year/module). Pyroligneous Acid (PLA) is a broad-spectrum organic pesticide extracted from forest residues.
- **advanced solid fuels -** high density, water resistant pellet production (~200,000GMT/year per plant)
- **Integrated district heat/power** and mixed-use industrial manufacturing
- **Hydrogen & other liquid biofuels**

CONCLUSIONS

- **THERE IS A STRONG & GROWING INTEREST IN RENEWABLE, BIO-BASED INVESTMENTS**
- **INVESTMENT DECISIONS ARE BASED ON**
  - ✓ PROVEN PROCESS TECHNOLOGIES
  - ✓ TIGHTLY COUPLED TO ECONOMIC FIBRE RESOURCES
  - ✓ DEFINED LOGISTIC PATHWAYS
  - ✓ PRO-ACTIVE GOVT/COMMUNITY SUPPORT