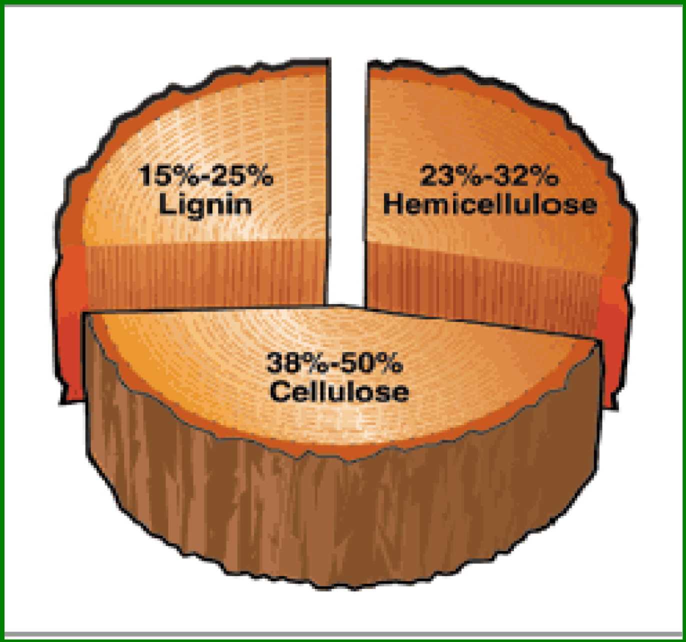
Seeing the energy for the trees

How can FBI capture a fair share of the value?



Outline

- FBI Energy Supply and demand dynamics
- The opportunity
- Positioning to realize the opportunity
- Requirements to successfully execute v Current capabilities
- Options

1 BD t wood = 3 Barrels of Oil or 5 MWh

1 BD t mixed paper = 440 l of ethanol

Ceres Ventures

A Business accelerator with extensive M&A & Development Capital Fund management experience in both developed & developing countries.

We specialise in providing end to end solutions for the creation of biomass feedstock resources including the creation and use of tradable carbon certificates based on carbon sequestration or mitigation

We are part of an international consortium operating throughout Europe, Asia/Pacific, USA , Latin America and Southern Africa

Our comprehensive knowledge and experience covering the Global Forest Based, Bioenergy and Biochemical Industries is supported by an unrivalled international contact network and this combination have been successfully deployed to create value for more than a decade

CERES VENTURES

HAWKINS WRIGHT

Energy from forests

Bio-energy and the global forest products industries

A multi-client proposal

FB Industry as Energy Source and User

- FBI Energy - 3rd largest industrial user
- (7 EJ/a)

- Generates about 50 % of its own requirements

- Energy value of wood consumed :
  - $ 273/ m3 lumber (Residue potential $73/m3 or $60 less own use)
  - $604/tonne Pulp (Residue potential $350 0r $130 after meeting own requirements)

- ROC for energy use alternatives higher than FBI

"If higher prices for commodities such as pulp and lumber are not realized, considering returns on capital investment, investment will only flow to new biomass energy projects in the future. This redirection in investment will occur until pulp and lumber prices reflect an adequate premium above their energy value" ***Jimmy Lee Mercer***

Pulp and Paper
Ideally Positioned to lead

Established Infra structure

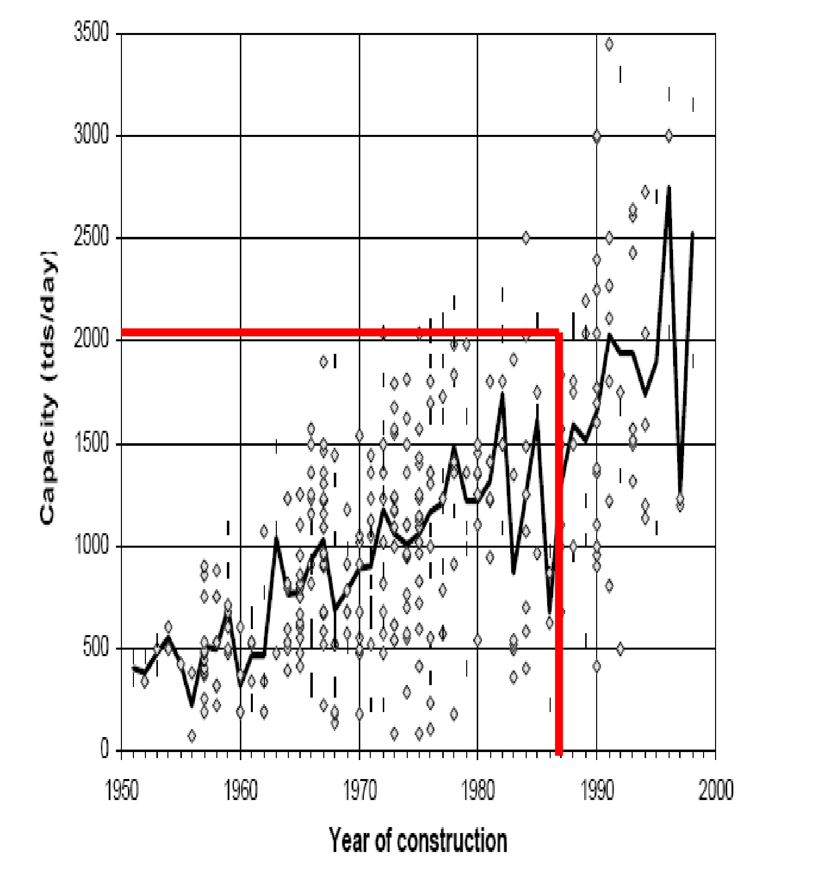
Large CHP Base

Existing asset base that can be converted

BLG have cost advantage for production of 2nd Generation Fuels

Biomass sourcing

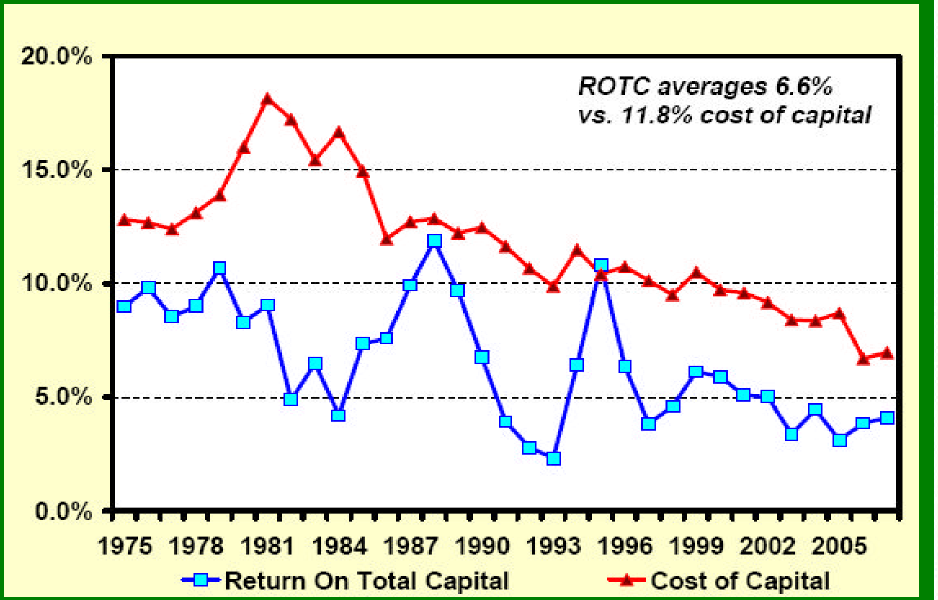
Plants ideally located relative to forests and recovered paper flows



Mill Age NA/EU/Japan

The North American Industry today

- Declining per capita demand
- Asset rationalisation lead restructuring (4mil tons Pulp & 2,8 mil tons paper)
- Energy cost inflation redefining competitiveness
- Sold off forestry assets – pressurising fibre cost
- 3rd Party energy supply not its thing – left to others



30 years of sub WACC returns

No New mills for 12 years

VC picking up assets at 30 - 40% of replacement value

Back to basics, core business focus, controlling costs

The Opportunity (Threat)

BIOMASS = Food, Feed, Fibre, Fuel, Feedstock

Competition for Resource access

Competition for Land

Competition for Capital

Climate change,
Energy security
Rural development
BRIC Consumption

Annual Value of Bio Energy market 2020

EU $300Bn

NA $ 400Bn

Re - Pricing of Biomass sources and supply chains

What share will FBI capture

Lesson from Energy Incumbents

Enduring Superior returns Long Term

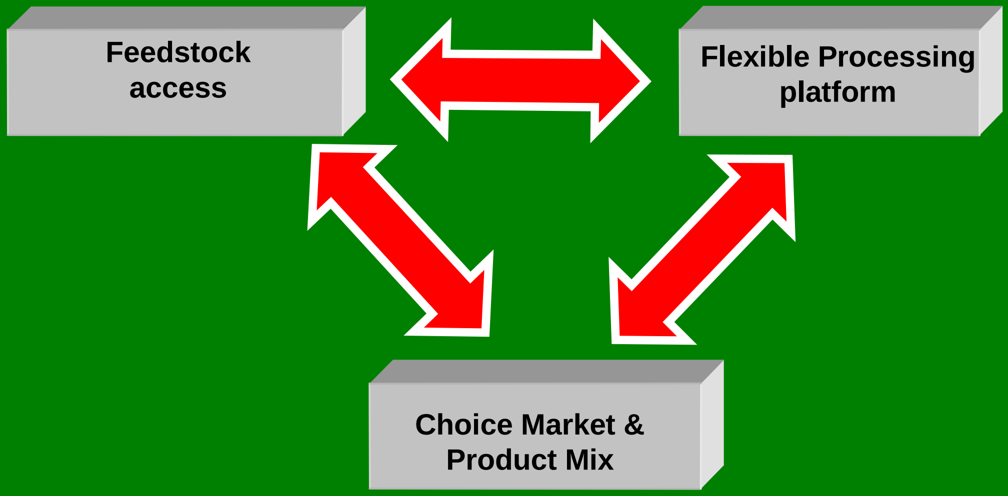
- market customer choice

- feedstock access

- unique supply chain,

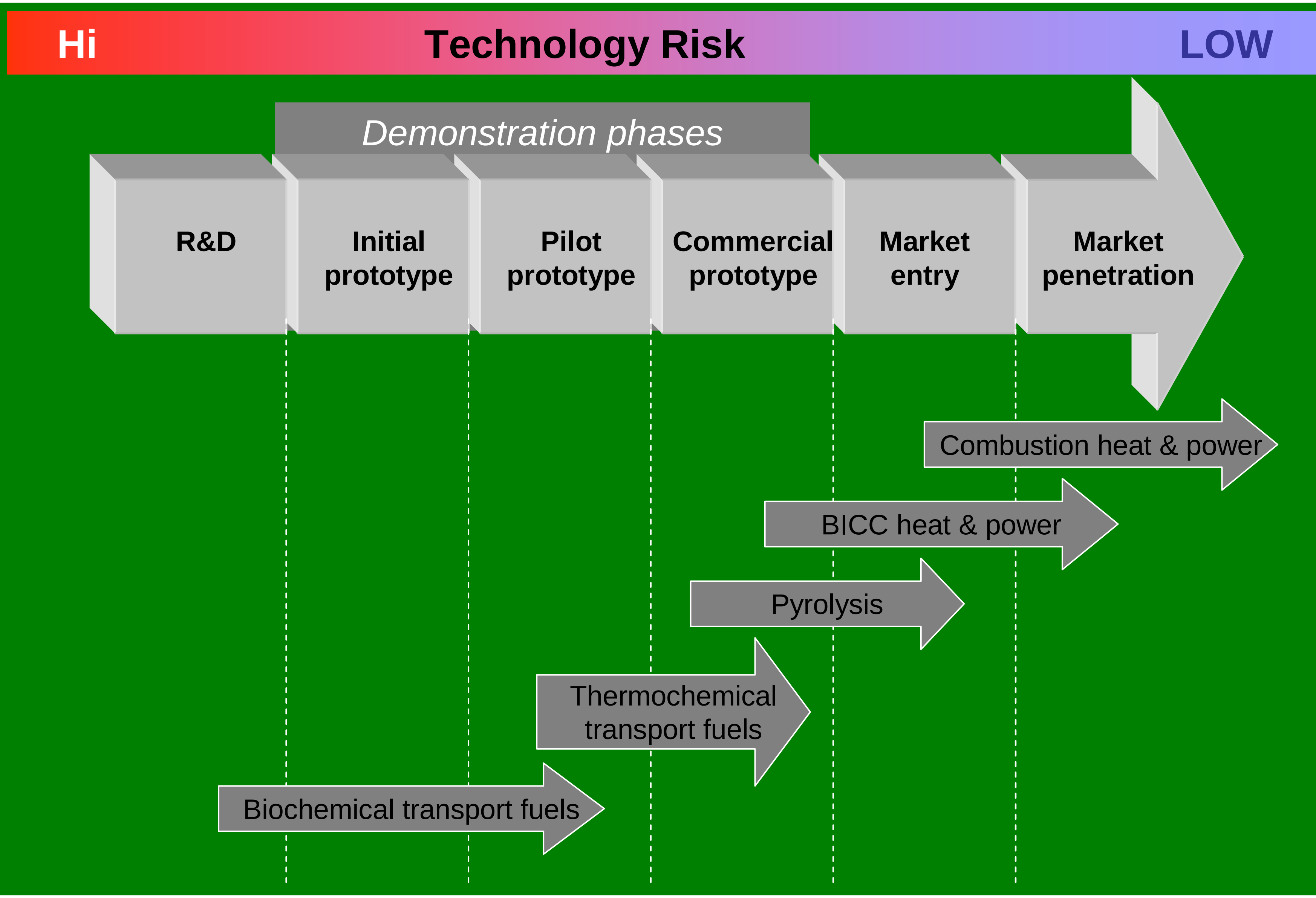
Product not process design determine lasting success

The Winning Formula:



Short Term *– Right Technology choice = First Mover Advantage*

Current Status of Wood Energy Technologies



Wood Energy - Strategic Pathways

Realising the full Energy value of the wood flows through the Bio Refinery Model

Shaping the Future

Non Forest Products Players

- Pre Energy Wood based Biomass Power
- Choren BTL FT Diesel (Shell, VW, Diamler)
- Range Fuels BTL FT
- Various Resource Exploration Co's - Significant feedstock developments

Wood energy - Strategic Pathways

Realising the full Energy value of the wood flows through the Bio Refinery Model

Reserving the right to play

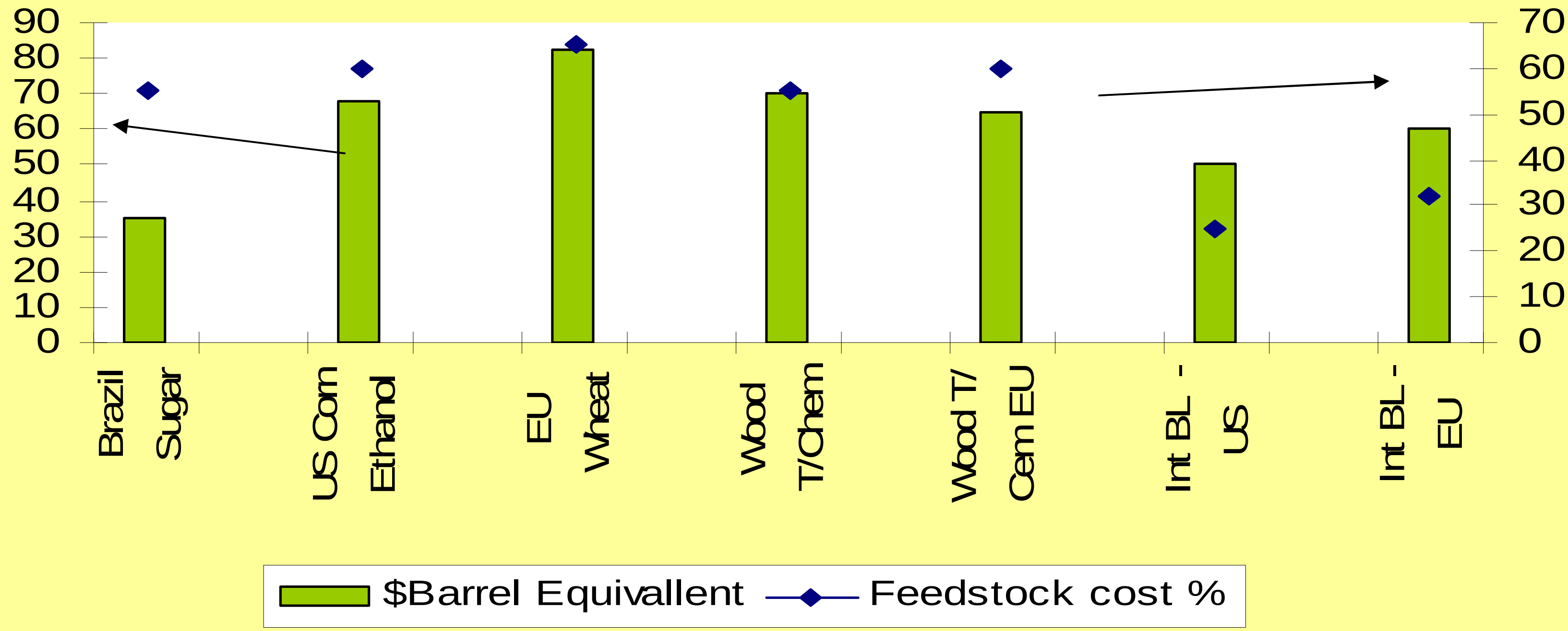
Forest products Players

- Weyco/Chevron
- Stora / Neste
- UPM/Carbona

Non Forest products players

- GM/ Coscata
- GM/Mascoma
- ZeaChem/Greenwood Resources

The Importance of feedstock cost



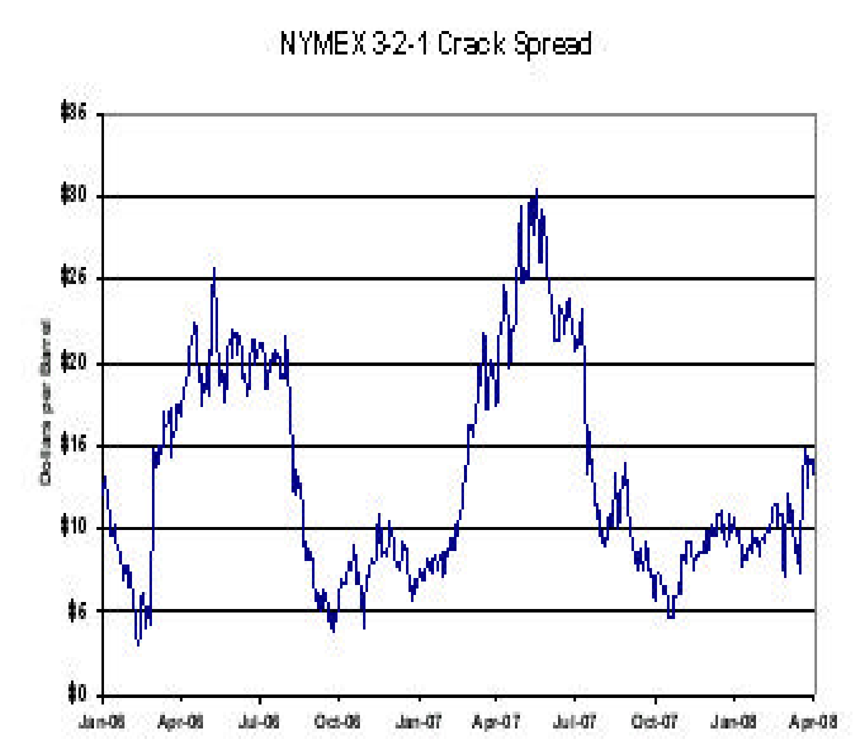
Positioning Options
Heat & Power Dynamics

- Power market features
  - Complex regulatory frameworks
  - Prices not responsive to cost
  - Demand Volatility and long investment lead times
- Power Supply Features
  - High demand for replacement capital
  - Need for replenishing surge capacity (unproductive)
  - Renewables important but main focus is on wind
- Heat market features
  - Proximity bound so location of supply close to demand
  - Fragmented customer base with unique requirements
  - Difficult to meter and measure
- Heat Supply Features
  - Conventional combustion inefficient; CHP still minor producer
  - Feedstock supply chain essential

Positioning Options Fuel Sector Dynamics

Demand side

- Demand shift toward diesel/ middle distillates
- Changing ICE and Fuel Specs



Supply side

- Changing quality of crude vs. refining capabilities to process
- Volatile refinery margins
- Huge capital investment
- Talent constraints – e.g.50% of engineers retiring in 15 year timeframe

Feedstock owners capturing greatest value

Bio Energy Policy Instruments G8+5
The Key Developmental Drivers

Country	Binding Targets/Mandates[1]	Voluntary Targets[1]	Direct Incentives[2]	Grants	Feed in tariffs	Compulsory grid connection	Sustainability Criteria	Tariffs
Brazil	E, T		T					Eth
China		E,T	T	E,T	E, H	E,H		n/a
India	T, (E*)		E	E,H,T	E			n/a
Mexico	(E*)	(T)	(E)			(E)		Eth
South Africa		E, (T)	(E),T					n/a
Canada	E**	E**,T	T	E,H,T				Eth
France		E*,H*,T	E,H,T		E			as EU below
Germany	E*,T		H	H	E	E	(E,H,T)	as EU below
Italy	E*	E*,T	T	E, H	E	E		as EU below
Japan		E,H,T				E		Eth, B-D
Russia		(E,H,T)	(T)					n/a
UK	E*,T*	E*,T	E,H,T	E,H	E		T	as EU below
US	T	E**	E,H,T	E,T	E			Eth
EU	E*, T	E*,H*, T	T	E,H,T		E	(T)	Eth.;B-D

Based upon information provided by the countries and summarized in the country annexes.

E: electricity
H: heat
T: transport
Eth: ethanol
B-D: biodiesel

** target applies to all renewable energy sources*
*** target is set at a sub-national level*
(..) policy instrument still under development/awaiting approval
[1] blending or market penetration
[2] publicly financed incentives: tax reductions, subsidies, loan support/guarantees

1,2,3 Pulp and Paper to Bio Refining

1

Improve EBITDA

Eliminate Fossil Energy purchases
+
More products Energy/Chemicals from existing feedstock supply

2

Grow Revenue

Product development

Outside energy and chemical product sales
+
Select product market mix and supply chain partners

3

Maximise ROI

Knowledge based Manufacturing
+
Continuous Product / Market Development
+
Driving Supply Chain Productivity

Vision of step 3 determines step 1