



Accelerating the Development of a Bioeconomy

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Strictly Private and Confidential

The Whole World Was Watching



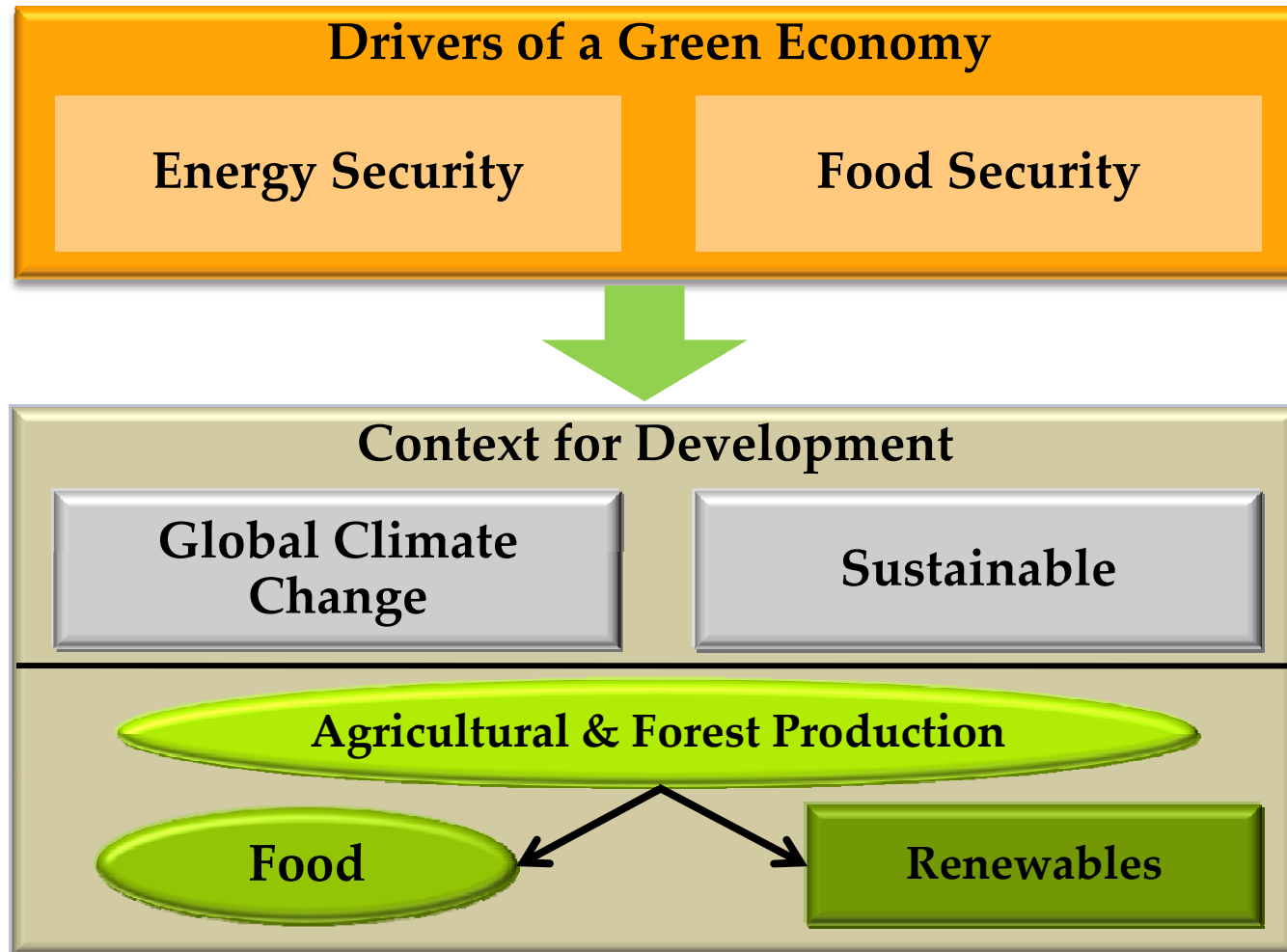
Presentation Outline

- The Biogreentech opportunity: Moving to a sugar economy
- Accelerating the growth of the Chilean Bioeconomy
- The Malaysian Strategy; Important learnings
- A few principles going forward

Global Megatrends Present Long Term Challenges

- Food Security
- Energy Security
- Global Climate Change
- Sustainability

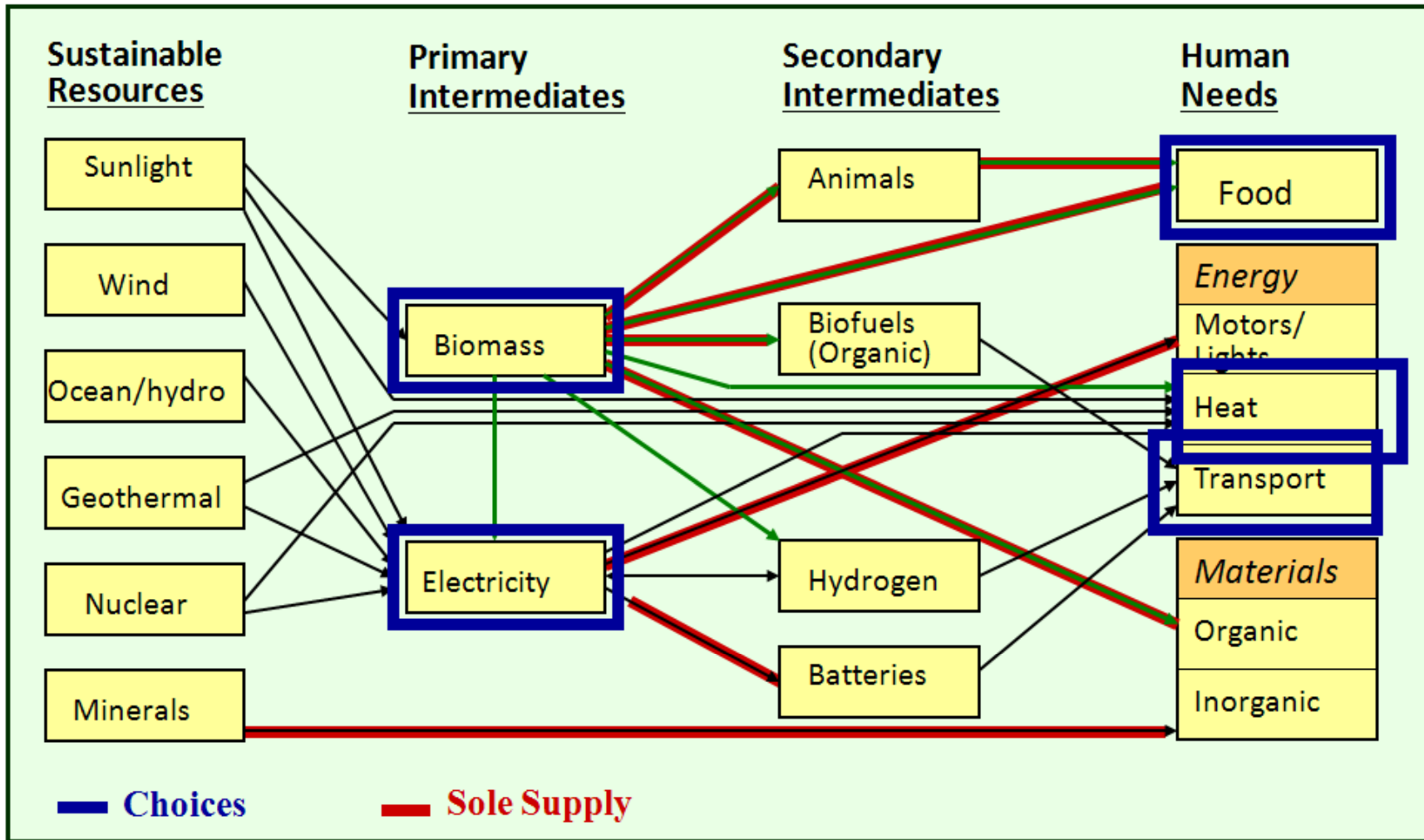
Future Innovation and Growth Drivers



Biomass Is Key

Moving From A Petroleum To A Petroleum &
Biomass Derived Sugar Based Economy

Biomass, the Only Foreseeable Sustainable Source



A Growing (and Hungry) Population

Figure 5.1 World Energy Demand by Fuel Type

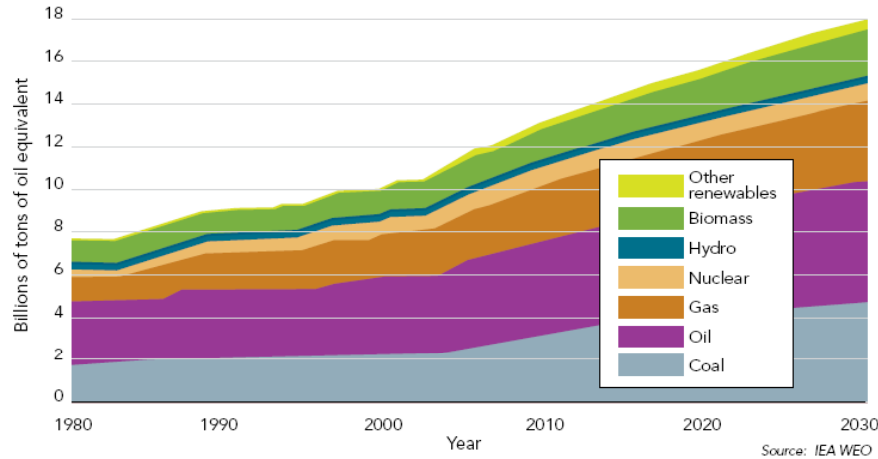


Figure 5.14 Agricultural Production and Predicted Amount of Calories Needed in 2050

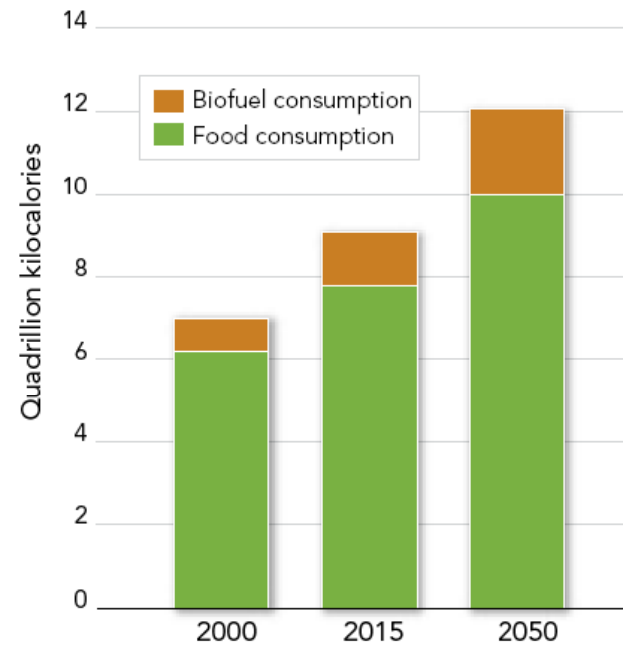
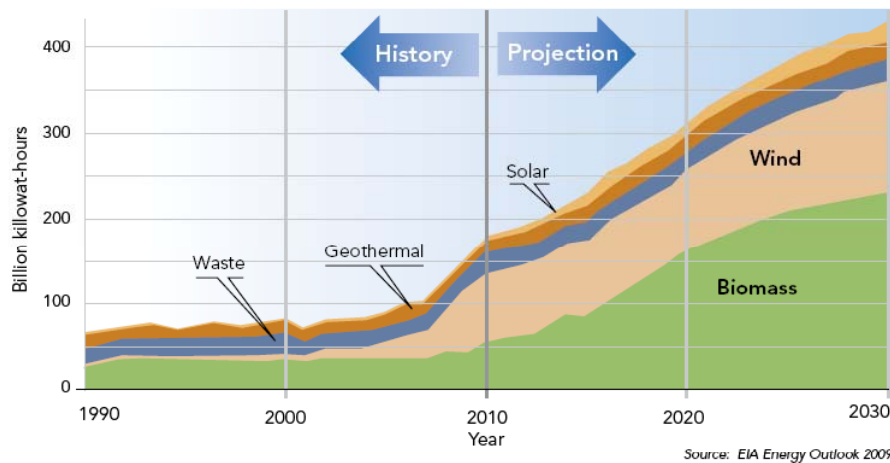
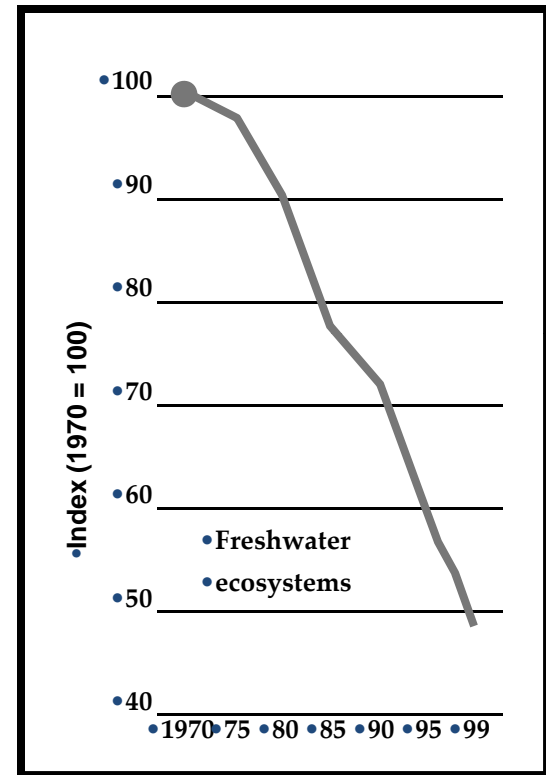
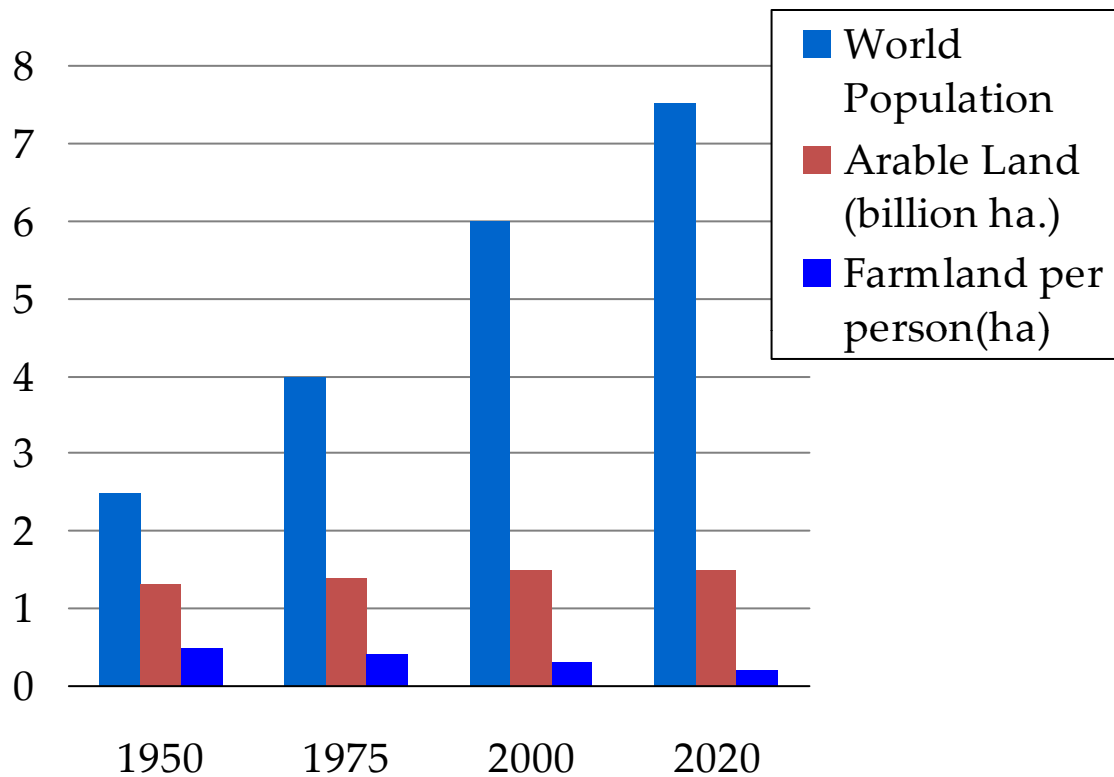


Figure 5.3 The Future of Non-Hydro Energy Generation: Biomass



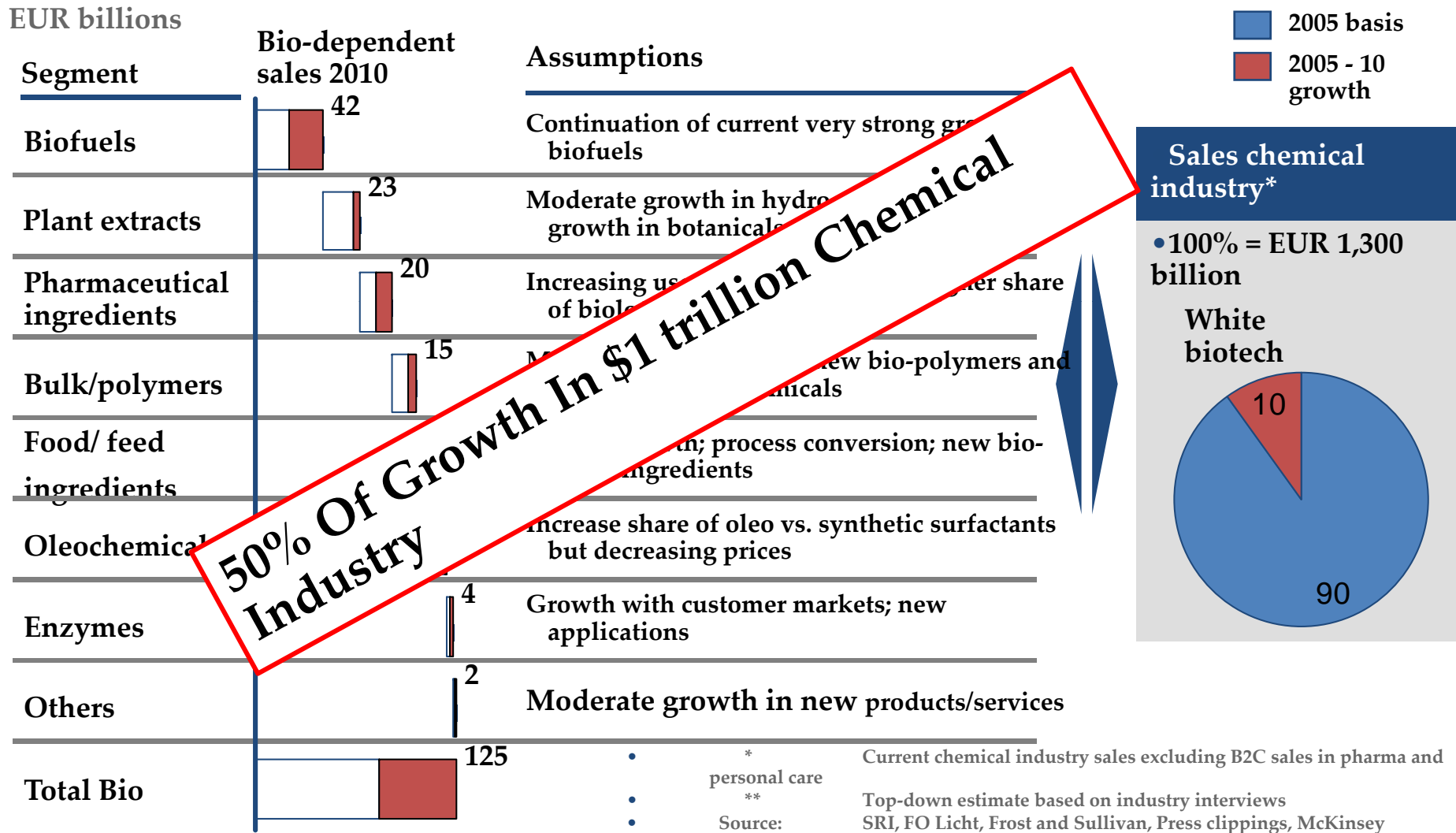
The Demands for Agriculture Stay the Same



More food on less land with half the water

• Source: United Nations, 1999

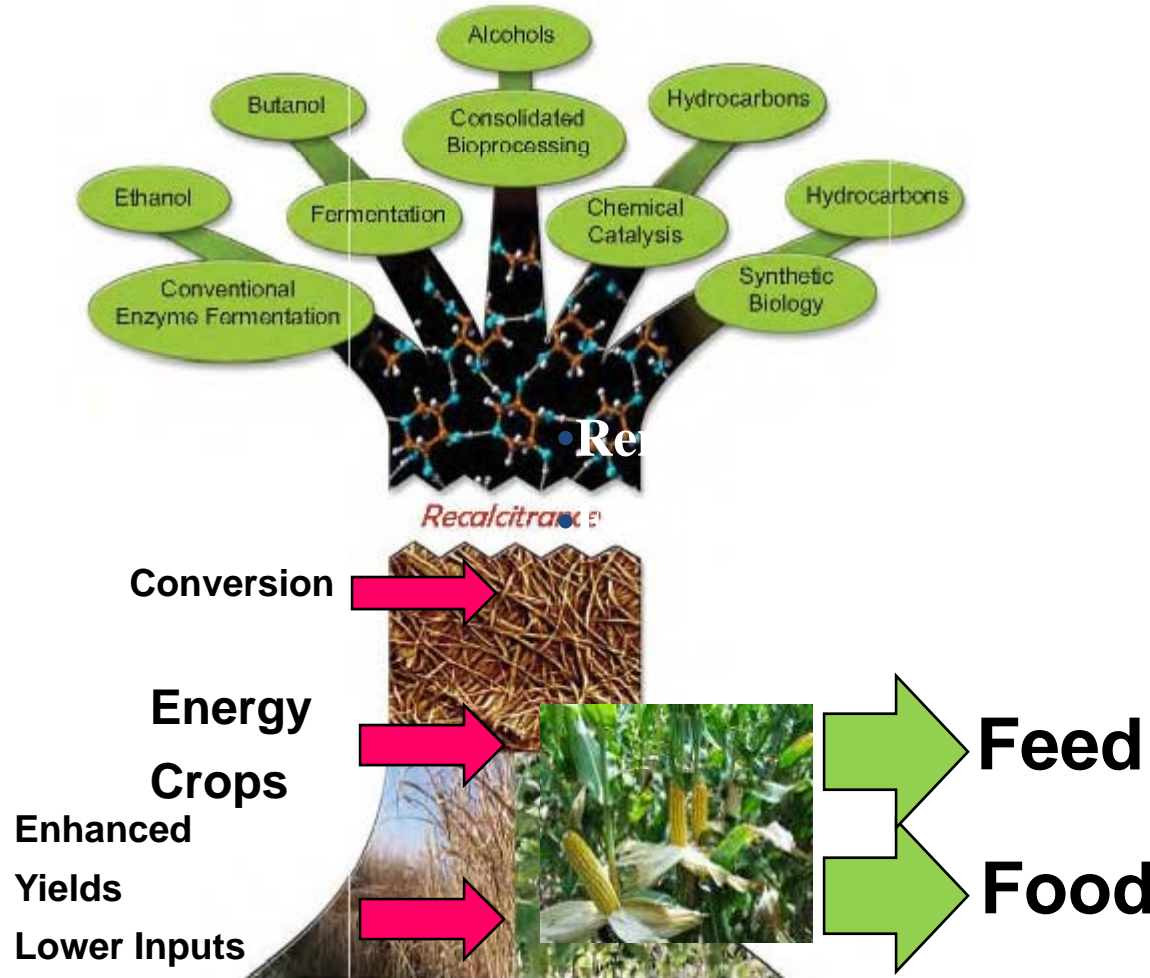
It's Not Just Biofuels, Its Renewable Chemicals & Materials



The Biomass Feed Stock is Key

Investment Opportunities

- Increased productivity
- New Energy Crops
- Conversion technologies
- Fermentation Products
- Carbon sequestration
- Technology integration & adaption



BioGreentech Centers of Innovation Not Necessarily Next to Feedstock



Biomass – Global Opportunity Requires Innovation (but from where..?)

• Productive Forest Areas



Companies Going To The Biomass (SUGAR)

- Amyris to Brazil
- Shell/Codexis/Cosan To Brazil
- BP just completed two deals in Brazil
- Many others

Economic Growth Strategies

Market driven

Sustained competitive advantage

Chile has done it before!

Berries, fruits, vegetables shipped to the Northern Hemisphere in their winter months

Acceleration Strategy to a bioeconomy

- Market driven
- Sustained competitive advantage
 - Short and long term advantages
- Strong internal R&D
- Global access to markets and innovation

Open Innovation

- No one has all the goods ideas, the required human capital, the financial resources for sustained growth in a globally competitive marketplace.
 - TOO SLOW
 - TOO EXPENSIVE
- Therefore to sustain rapid economic growth requires global access to technology, products, capital and markets in order to leverage the local sustained competitive advantages into rapid economic growth

The Innovation Model of Multinational Corporations

- Goal: to grow at 8 – 10% per annum
- Open Innovation in action
 - Strong internal R&D
 - In licensing
 - Partnerships
 - Acquisitions
 - Mergers

MNC Open innovation Model

- Global scouting
- Incubation to nurture early stage technologies
- Venture capital funds
 - Innovation occurs in small companies
 - Small companies need capital
 - Venture capitalist provide risk capital
 - VC deal flow is a global window on innovation

Developing Countries can and must adopt the same model

Malaysia as a case study

- Fifty year old country
- Population of 27 million with a GDP of USD190 billion
- Desires to transition from a manufacturing natural resource based economy to a knowledge based economy driven by innovation.
 - 2020 goal is to double personal income on a GDP of USD550 million
 - Become a green economy
 - Reduce carbon intensity by 40%

Malaysian Bio Sector

- Nascent
- Weak R&D
- Huge opportunity
 - Established Oil Palm plantation industry
 - 80 million tons of biomass produced annually
 - Sustainability challenged
 - Geographically located near large and growing markets
 - Climate conducive to rapid biomass production
- Goal become the hub of an ASEAN biorenewables industry

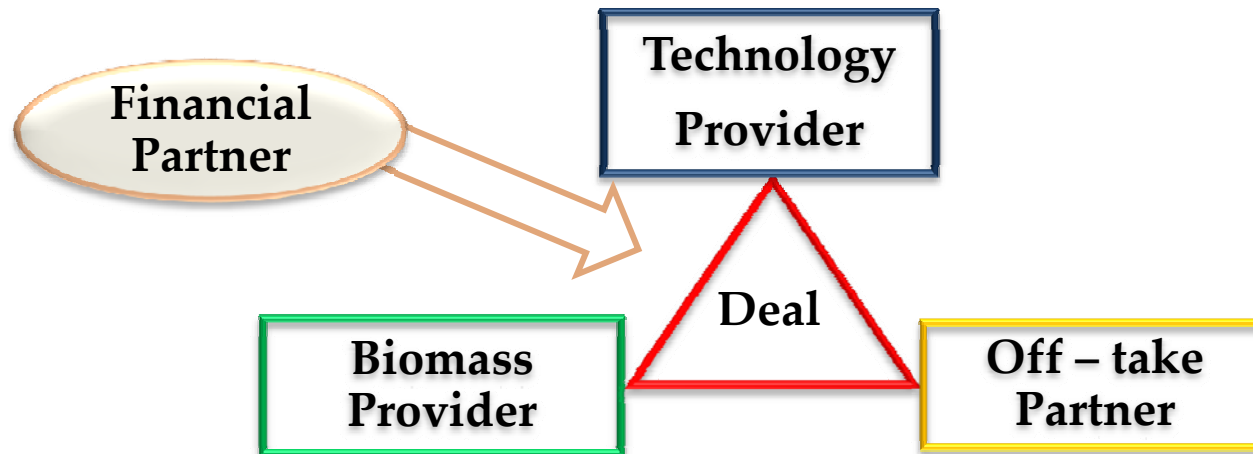
Strategy

- Conducive environment
- Strengthen internal R&D with emphasis on translational research
- Window on Innovation via a venture fund
 - Invests globally in Malaysia centric companies
 - Brings companies to Malaysia for FDI, and partnerships with Malaysian companies
 - Assist in building a bio sector
 - Policy
 - Human capital

Chilean Opportunity

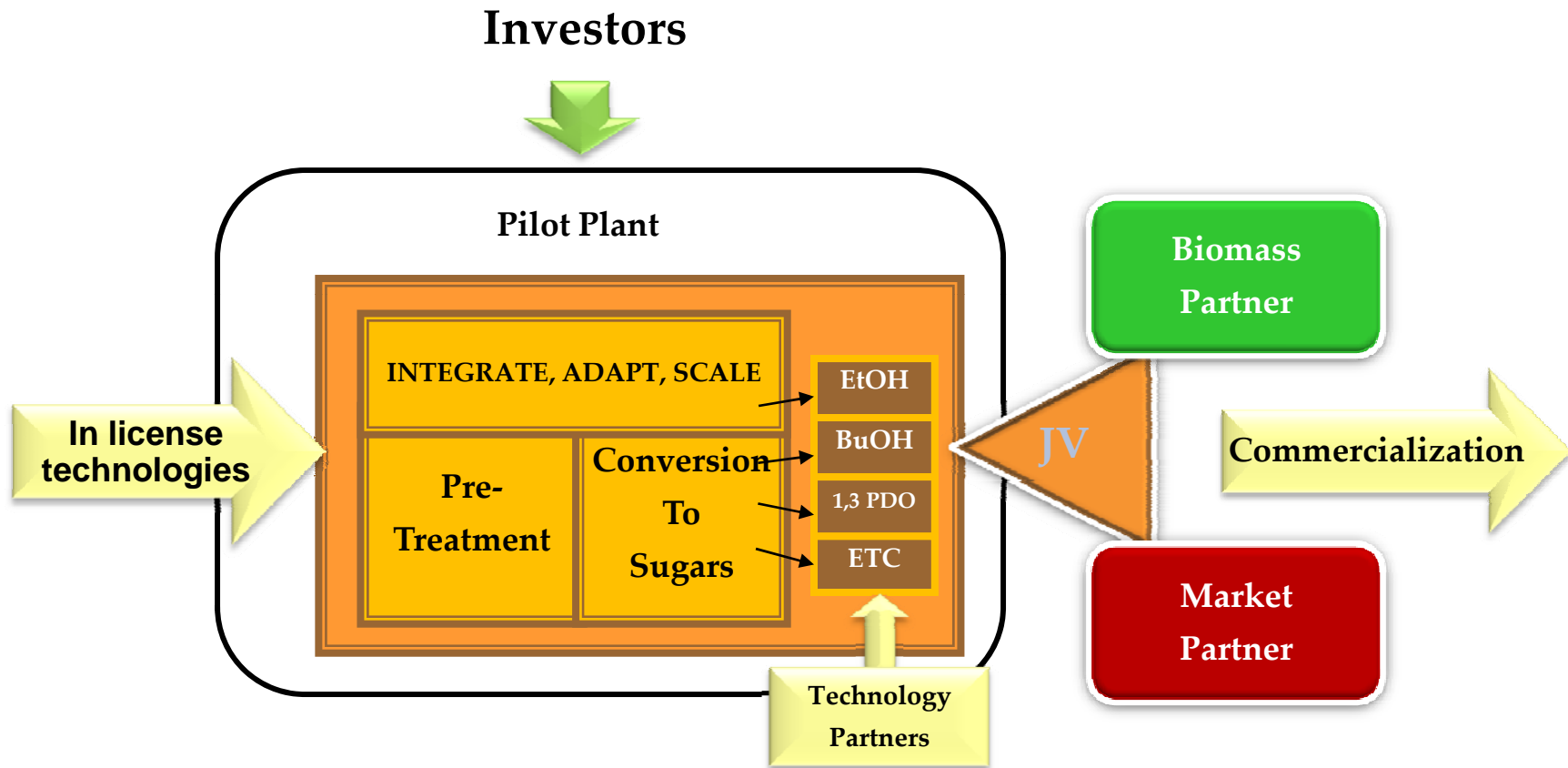
Woody Biomass
Strong University Research

Biorefinery Deal



- Barriers
 - Technological risk
 - Financial risk
 - Access to capX
- Barrier today is access to CapX for first plants

The Biomass Accelerator - Technology Risk



Learnings

- Incentives needed but not sufficient
 - R&D tax credits
 - Tax holidays
- Risk reduction
 - Technological
 - Shared pilot biorefinery
 - Targeted R&D
 - Financial
 - Loan guarantees
 - Govt supported PE Type Innovation Fund
 - Investment Tax Credits

Principles

- Identify where Chile has sustained competitive advantages in large markets
- Identify technology and business gaps
- Strong R&D base focused on translational research
- Aggressive global “open innovation” strategy
- Augmented by deal flow from a Global Biogreentech Fund
- Conducive business environment
 - Incentives
 - Risk reduction

Thank You

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