Value Added for Sustainable Agribusiness

With especial reference to Brazil

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Main Messages

1. Brazil’s agribusiness is very large. Its development set up a new paradigm and was technology and global market-based

2. Climate change and global warming are real and pose an ominous risk to continuous agribusiness growth and profitability

3. Adding value is a risk management strategy for Brazilian agribusiness involving new disruptive technologies, products, services, markets and creative financing

Brazilian Agribusiness Scale: <u>25% GDP</u>

200 million tons/a of grains

Third largest agricultural exporter after US and EU

<u>Top</u> world exporter of:

- Beef: 30 %
- Poultry: 40 %
- Sugar: 45 %
- Orange juice: 86 %
- Ethanol: 52 %
- Coffee: 32 %
- Soybeans: <u>2nd</u>, 40 %
- Corn: <u>3rd</u>, 10 %
- Pork, <u>4th</u>, 12 %

Sources: AGE/Ministério da Agricultura, Pesca e Abastecimento, USDA

What's behind Brazil's Agribusiness Success?

- *<u>Constructed</u> comparative advantage: global markets, technology, financing (Embrapa, Proalcool, and AMBEV, Embraer, VALE)*
- *Industrialized agriculture: "factory farms" capital intensity, technology sophistication*
- *Combination of <u>state public policies</u> and <u>private initiative</u>, domestic and foreign*
- *Pivotal role of <u>Embrapa</u> conquering cerrado, and shifting grain production paradigm*

Hopewell, Kristen (2016). *The accidental agropower: constructing comparative advantage*". http://dx.doi.org/10.1080/13563467.2016.1161014

The Economist (2016). *The Future of Agroculture, Vorsprung durch Technik, 11 June, p. 16*

What's behind Brazil's Agribusiness Success ?

- *Private R&D and investment*
- *Import substitution industrialization, urbanization, increased food demand, scarcity, higher prices, higher food supply*
- *Expanding agri exports, foreign exchange to pay for capital goods, technology imports*
- *Brazil's WTO assertiveness with Australia, India, Thailand, et al.*

Hopewell, Kristen (2016). *The accidental agropower: constructing comparative advantage". http://dx.doi.*org/10.1080/13563467.2016.1161014

Downside of Brazil’s Agribusiness Success ?

- *Displacement of peasants*
- ***Loss of biodiversity***
- ***Environmental impacts: soil, water, air, deforestation***

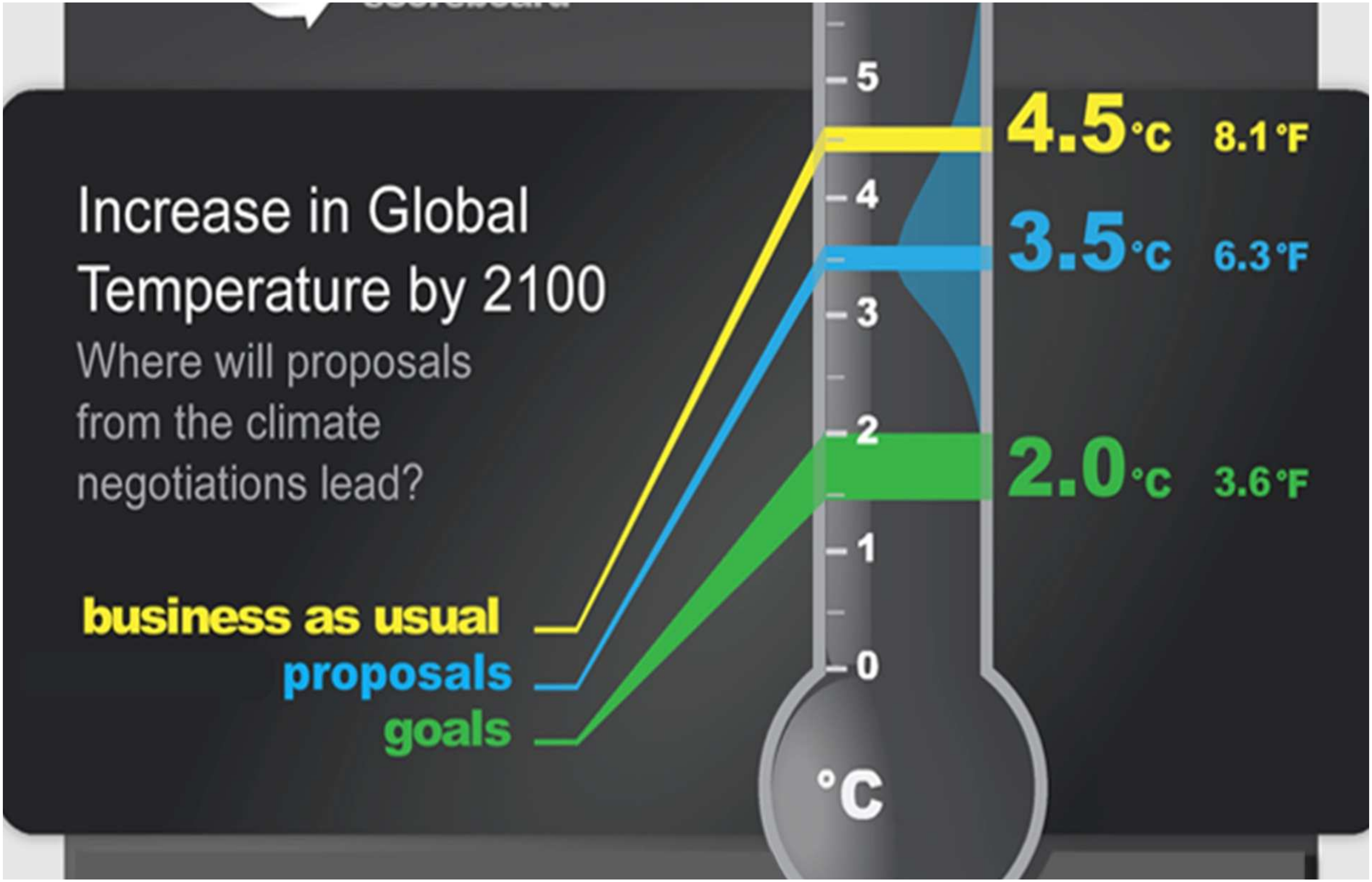
Hopewell, Kristen (2016). *The accidental agropower: constructing comparative advantage”. http://dx.doi.*org/10.1080/13563467.2016.1161014

Downside of Brazil's Agribusiness Success ?

- ***Unequal land distribution: 53% agri land to 1.5% landowners***
- ***Fertilizer intensity increase***
- ***Limited direct impact: income redistribuition, hunger, poverty***
- *Climate change risk, a challenge*

Hopewell, Kristen (2016). *The accidental agropower: constructing comparative advantage". http://dx.doi.*org/10.1080/13563467.2016.1161014

Climate Warming to 2100



https://www.climateinteractive.org/wp-content/uploads/2015/12/Scoreboard-static-clean-LARGE-format.jpg

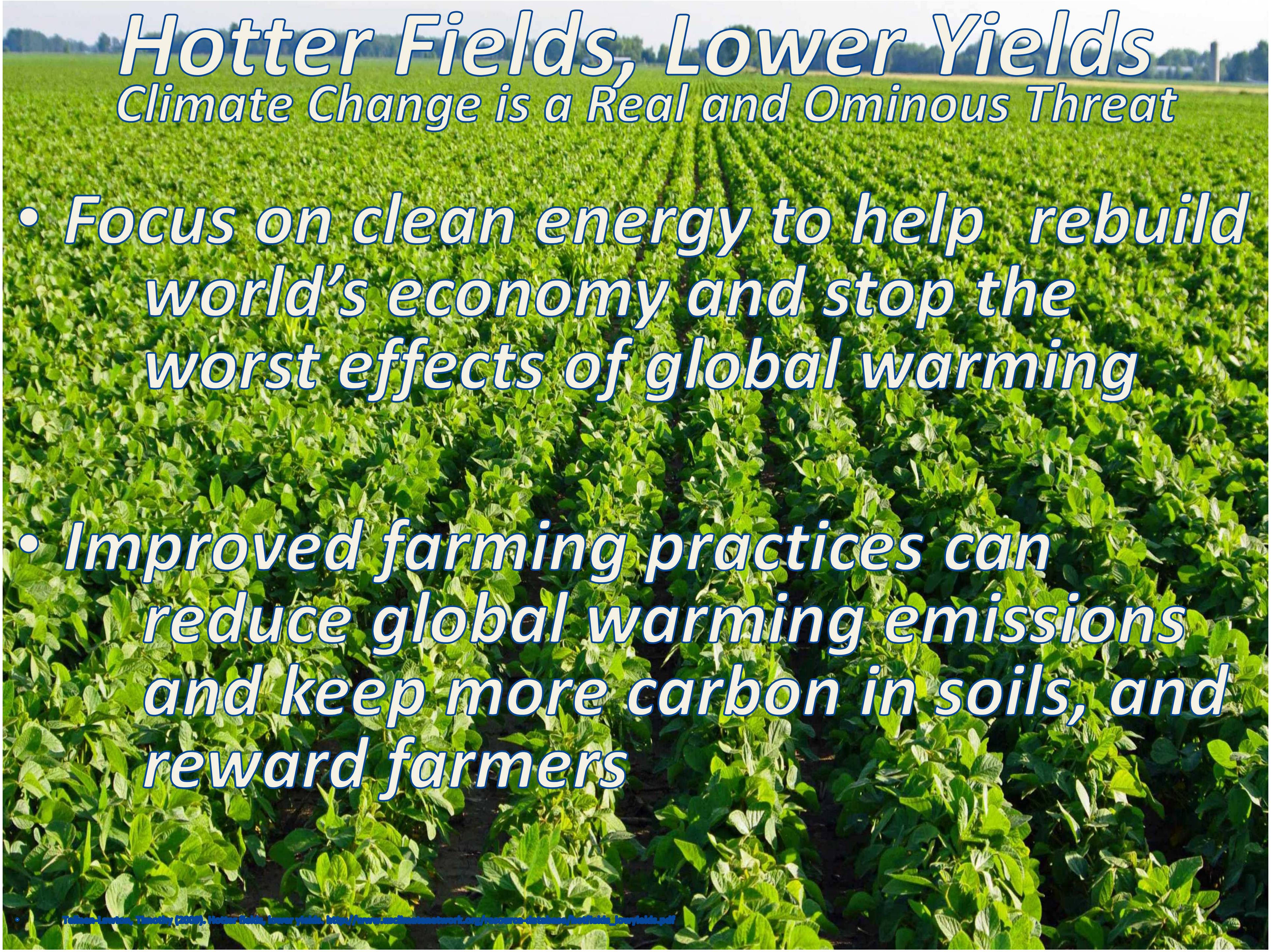
The High Latitudes Are Changing the Most with Global Warming

Hotter Fields, Lower Yields

Climate Change is a Real and Ominous Threat

- *Destructive storms, pests, weeds, diseases, ozone pollution will cause further damages to agriculture from global warming*
- ***Carbon Business Plan**. Agriculture can help reduce impacts and promote the transition to a clean energy economy (Brazil Paris commitment: 50 million m^3/a biofuels !)*

- Telleen-Lawton, Timothy (2008). Hotter fields, lower yields. http://www.ucclimatenetwork.org/resource-database/hotfields_lowyields.pdf



Hotter Fields, Lower Yields

Climate Change is a Real and Ominous Threat

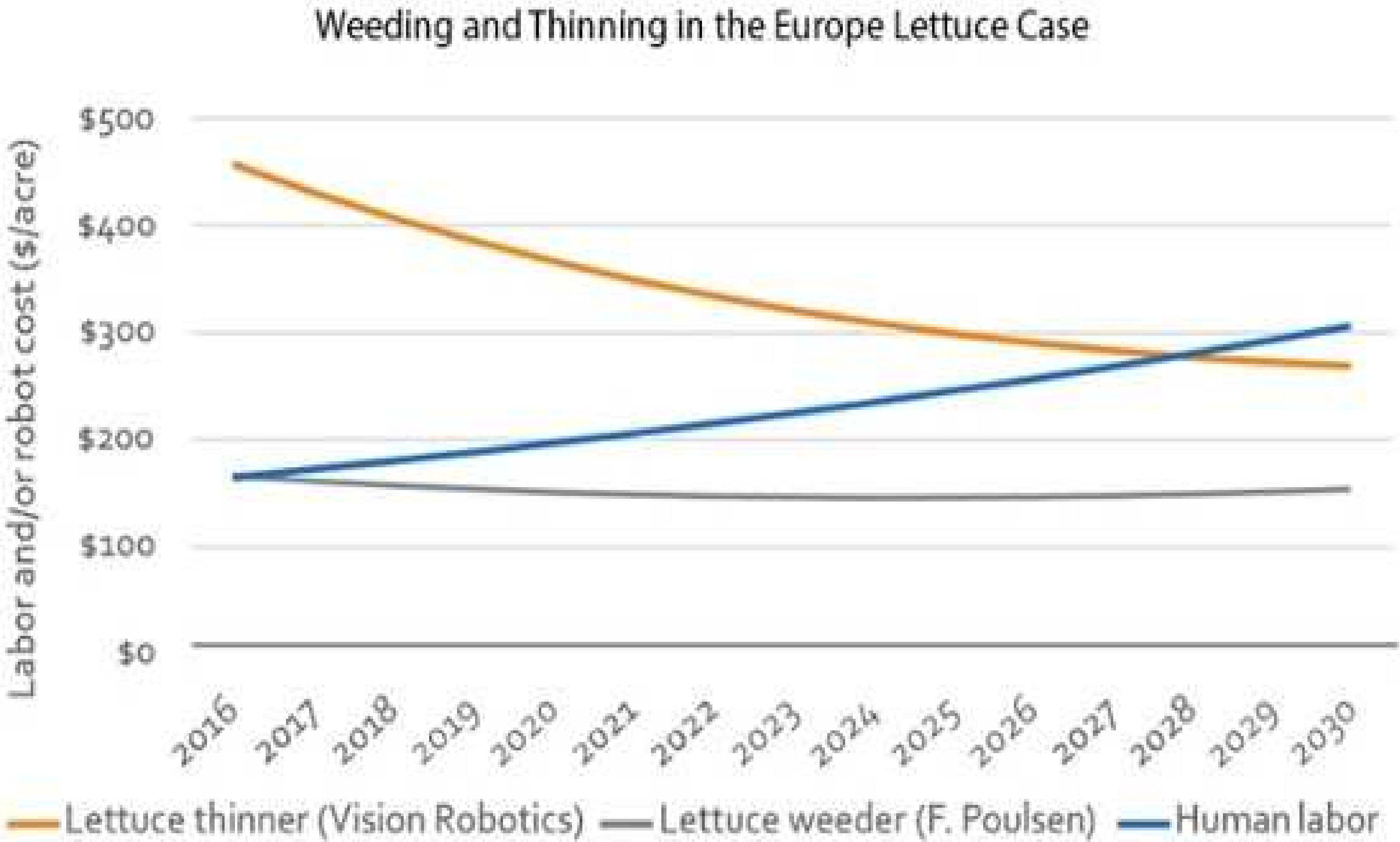
- *Focus on clean energy to help rebuild world’s economy and stop the worst effects of global warming*
- *Improved farming practices can reduce global warming emissions and keep more carbon in soils, and reward farmers*

- Tellson-Lawton, Timothy (2009). Hotter fields, lower yields. http://www.usclimatenetwork.org/resource-database/hotfields_lowyields.pdf

Value Added in Large/Small Scale: More with Less

- *Precision Agriculture based on information and many disruptive technologies for higher efficiency (e.g. C4 rice development)*
- *STI: Sustainable Trade Index. STI trade to monetize value-added from Sustainable Agribusiness*

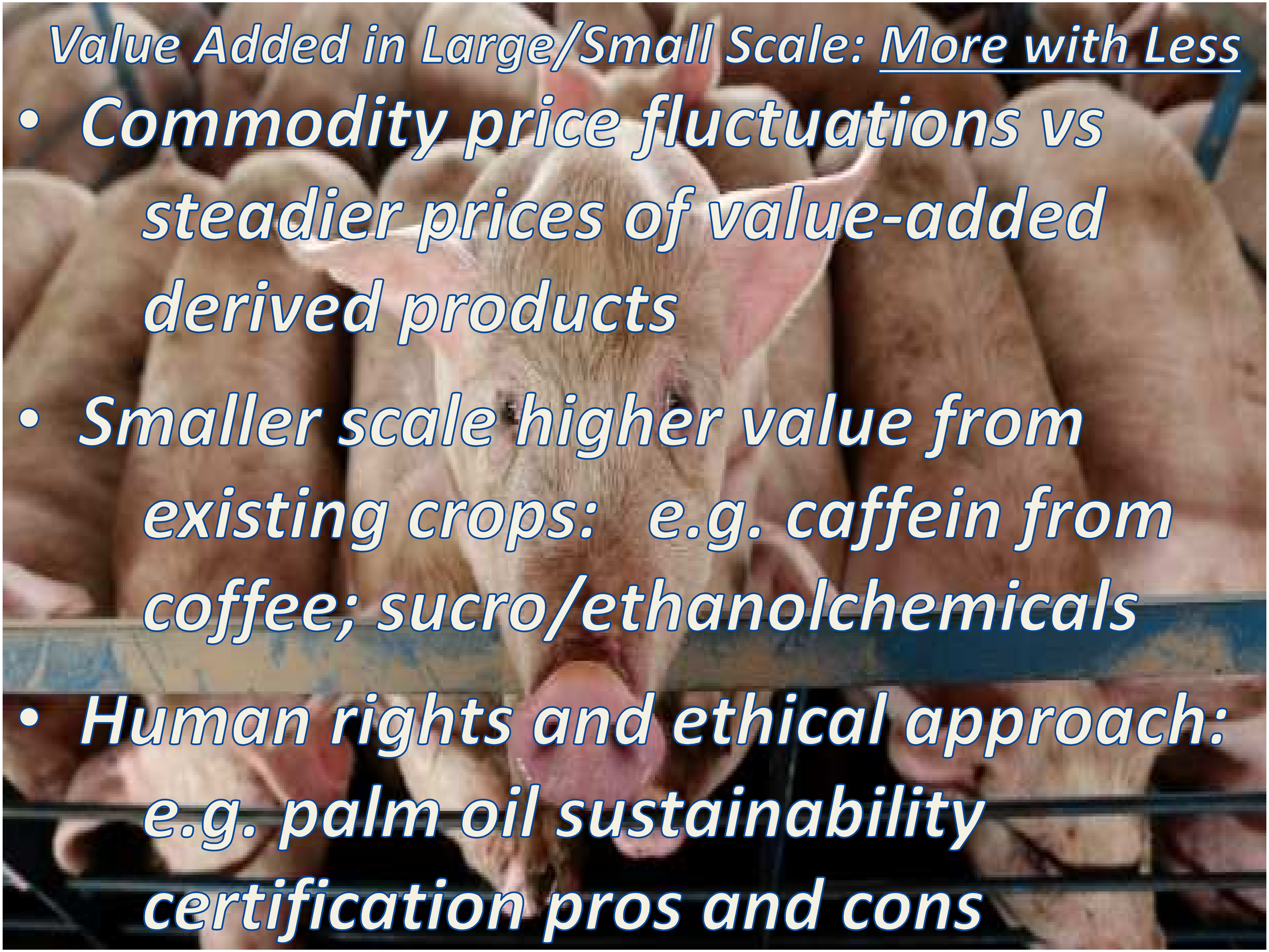
Robots and Drones on the Farm are part of Precision Agriculture



Source: Lux Research, Inc.

Value Added in Large/Small Scale: More with Less

- ***Carbon Trade: corporate, national, regional and global markets***
- ***Integrated performance in-out side the farm: from the field to the final consumer everywhere***
- ***Disruptive technologies and professional management: key***



Value Added in Large/Small Scale: More with Less

- ***Commodity price fluctuations vs steadier prices of value-added derived products***
- ***Smaller scale higher value from existing crops: e.g. caffein from coffee; sucro/ethanolchemicals***
- ***Human rights and ethical approach: e.g. palm oil sustainability certification pros and cons***

Value Added in Large/Small Scale: More with Less

- *Need for water management and conservation (70% global water consumption in agriculture)*
- *Embrapa-like initiative on low carbon agriculture/ agroforestry for value-added products and services for domestic and foreign markets*

Value Added in Large/Small Scale: More with Less

- ***Creative financing*** ***(green bonds, insurance, carbon trade, etc.) to support development of value-added products and services***
- ***Value added services: disruptive tech, logistics, infrastructure, trading, marketing, distribution, insurance***
- ***Value added in diversification within and outside agribusiness***

Risks and Opportunities of Agribusiness

- Huge growth opportunities
- More control over own future: market intelligence, investment finance, risk management, trade
- Higher value added in niche markets beyond commodity markets

Risks and Opportunities of Agribusiness

- Requires investment on intensive factors: knowledge, disruptive innovation, r & d
- Continuous adaptation and proactive response to challenges
- Especially coming from Climate Change and Sustainability