



GREEN ECONOMY FOR SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF THAILAND

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- ❑ **The Global Trend**
- ❑ **Thailand's Situation**
- ❑ **Bioeconomy: Transformation's Game Changers**
- ❑ **Pilot Project: Bio - Northeast**



In 10 years, the world may not be able to feed itself



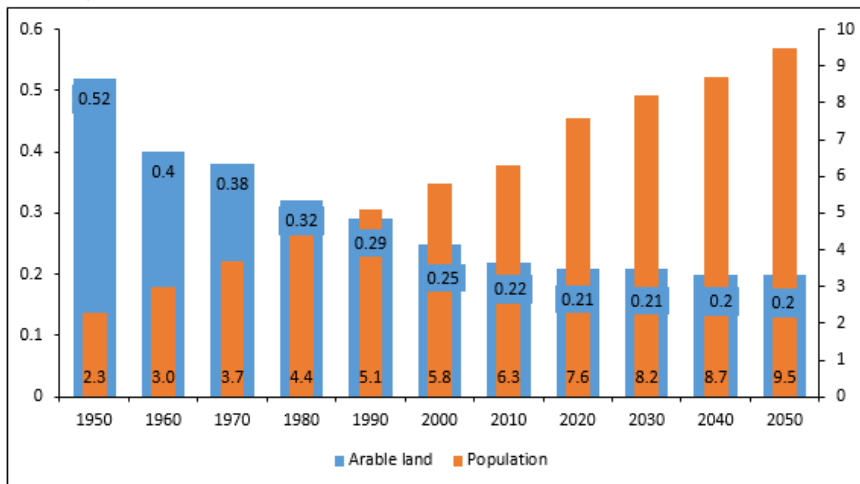
With the world's population increasing rapidly, we could be facing a 214 trillion calorie deficit by 2027.

Image: REUTERS/Gregg Newton



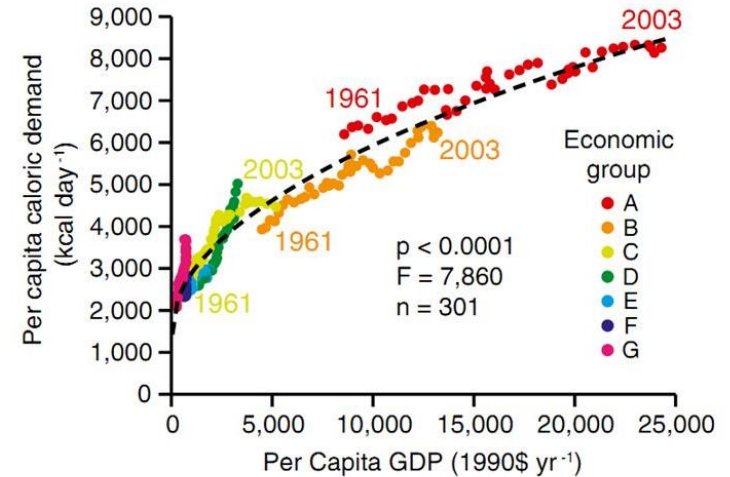
Feeding More People with Less Land is Boosting Pesticide Use Globally

By Technavio | August 26, 2015



Source: Technavio, 2015

The per capita demand for crops has been a similarly increasing function of per capita real income since 1960



Global relationship between per capita GDP and per capita demand for crop calories among seven economic groups (Tilman et al. 2011, *PNAS* 108:20260)

Source: Ecosystem Services in Rangelands: Paradigm Change from Supply to Reconciling Supply & Demand Osvaldo Sala.

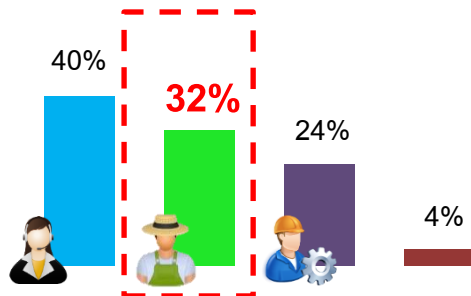
Novel demands in quality and scale need for diversification

Thailand's Situation: Potential & Problems of Agriculture

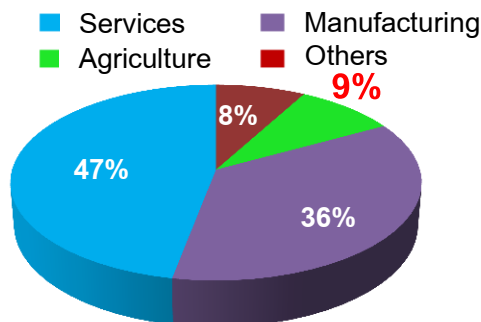
Agriculture is the foundation of Thailand development and very important for the economy.

1 Related to **almost half of total labor** BUT **creates economic value only 9% Thailand's GDP**¹

%Share of Employment in 2015

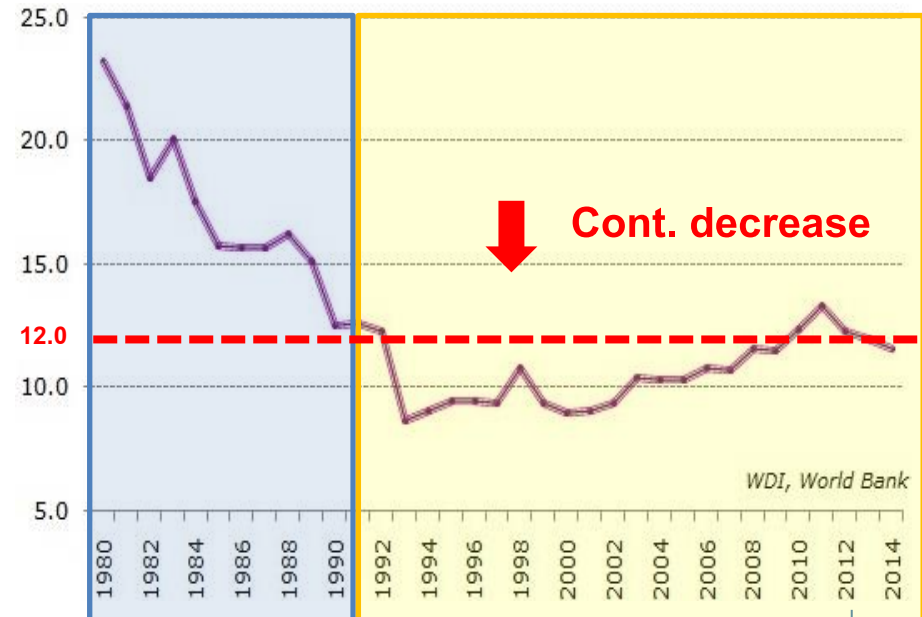


%Share of Real GDP in 2015



2 The value of agriculture product to Thailand's GDP is still **decreasing**²

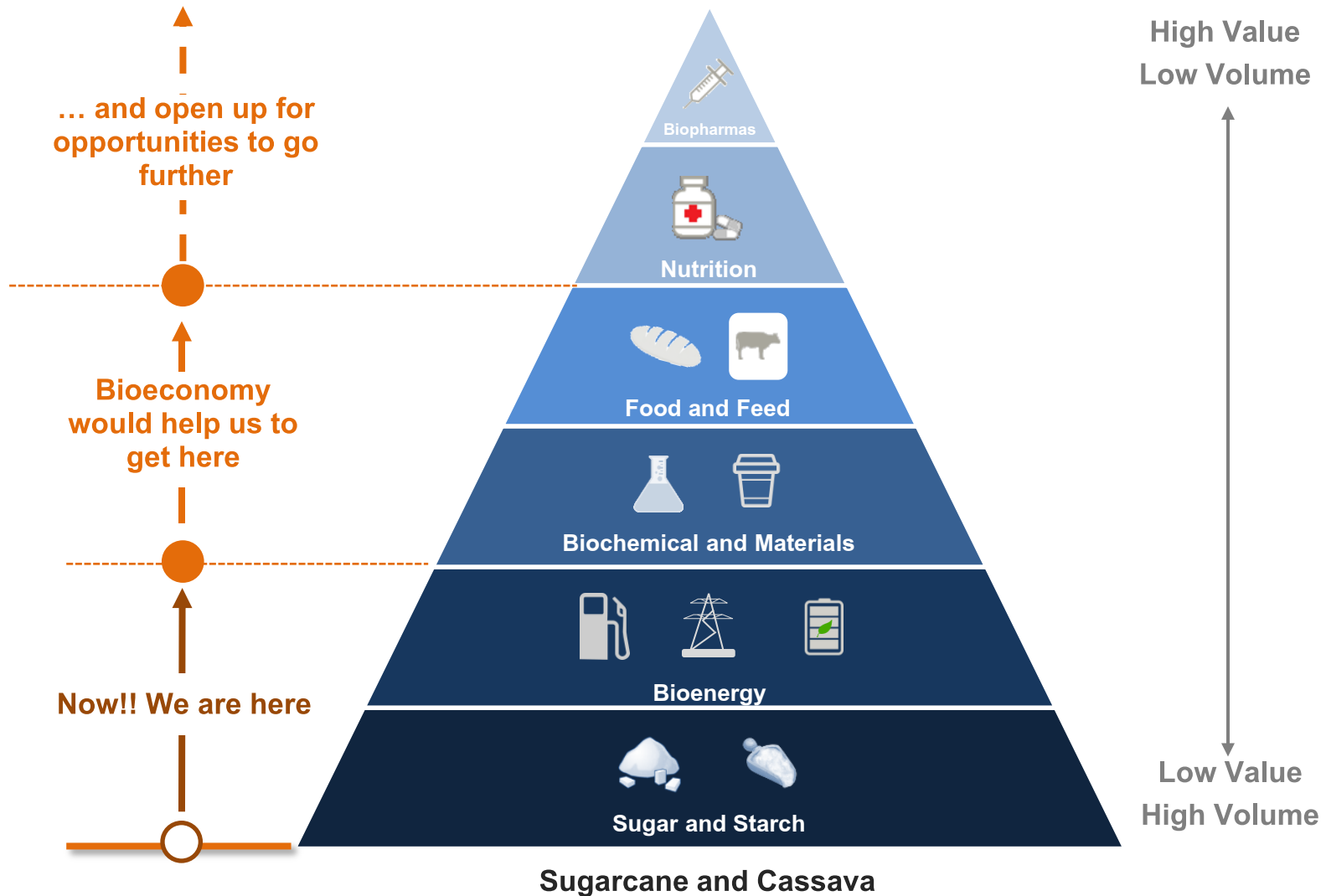
Agriculture Product Value to Thailand's GDP



Source: 1) National Bureau of Statistics and Bank of Thailand (2015)

2) Emerging Markets: Analyzing Thailand's, August, 2015. (<http://www.investopedia.com/articles/investing/081815/emerging-markets-analyzing-thailands-gdp.asp>)

Bioeconomy will be the ground for high value added products production



1

**Modern Farm/ Smart Farm
(High Technology)**



1st Pilot Crops

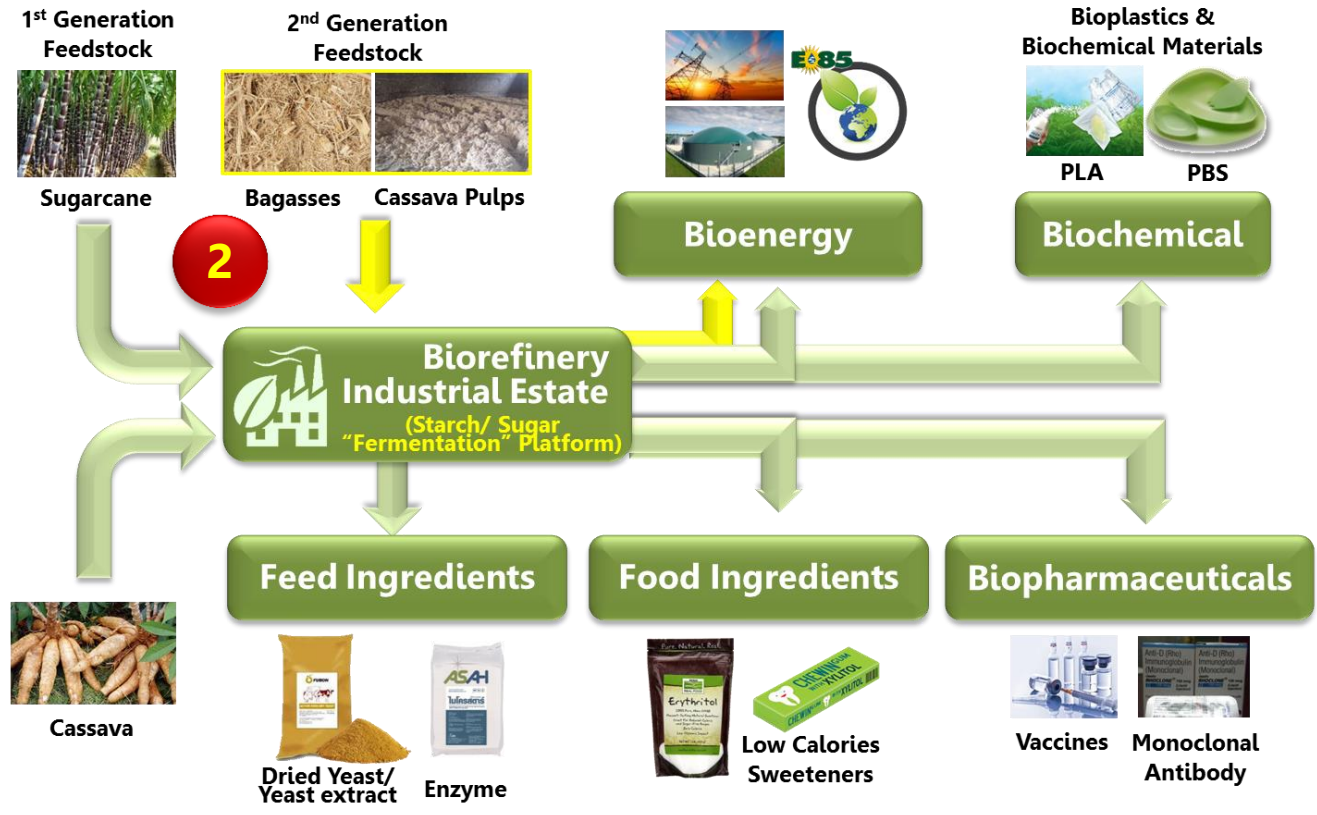


Sugarcane Cassava

2nd Pilot Crops



Soy Bean Peanut



3 **Bioeconomy R&D Center**

4 **Whole Package Supports (One-stop Facilitation Service Center)**

Expected outcomes for BIOECONOMY in 10 Year



Productive Growth

Economics Value
2x

Value added from sugarcane
>300,000
MB/Year

Value added from cassava
~100,000
MB/Year

Investment from DDI & FDI in Biopharma
100,000
MB

Export value of Biopharma & Adv. vaccines
75,000
MB

Successful launch of Biopharma & adv. vaccines in Thailand
>20
Items



Inclusive Growth

Farmer Income
↑65,000 – 85,000
THB/Year

Employment
>300,000
Households
>500,000
Households

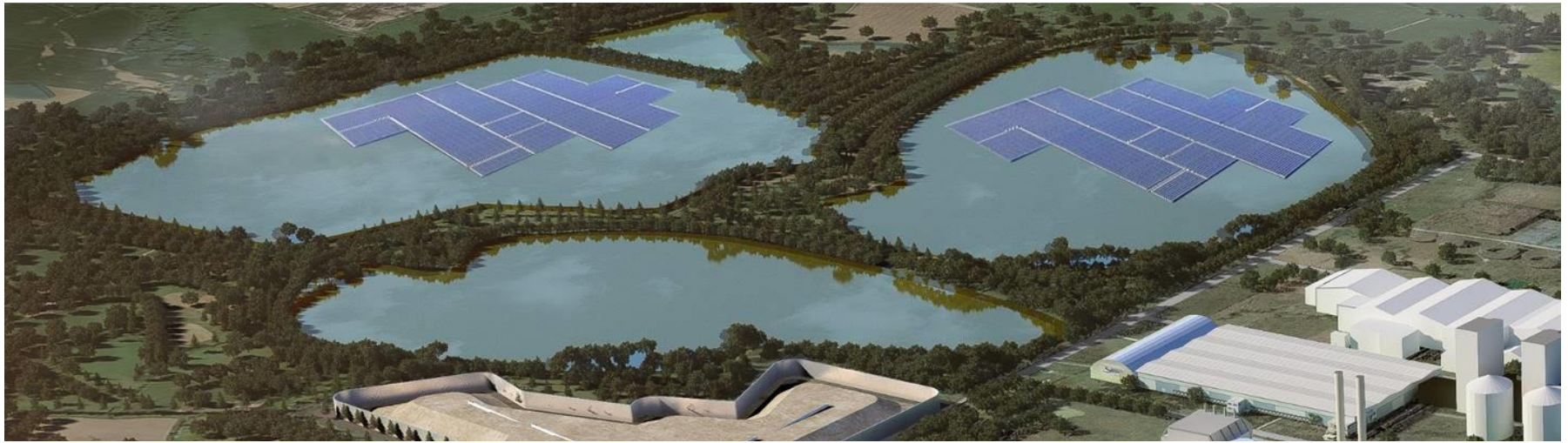
Knowledge workers /High-tech labor
20,000
Position



Green Growth

CO₂ Reduction
>70
Million tons¹

Bio-based Energy
>30
Million tons equivalent of crude oil¹
(in 20 years)



PILOT PROJECT



KHON KAEN BIOPOLIS

Biomaterial Center



Raw mat. Supply Security



Bioeconomy R&D Center



Renewable Energy

Biomass/Solar/Hybrid



Cutting point of

East-west
and Central Corridor



Green Industrial

Green Label/Water
Footprint/Zero waste



Double track railway (East-west Corridor)

9 km to Banpai Station



Biochemical city

High Value Chain
& Related Business

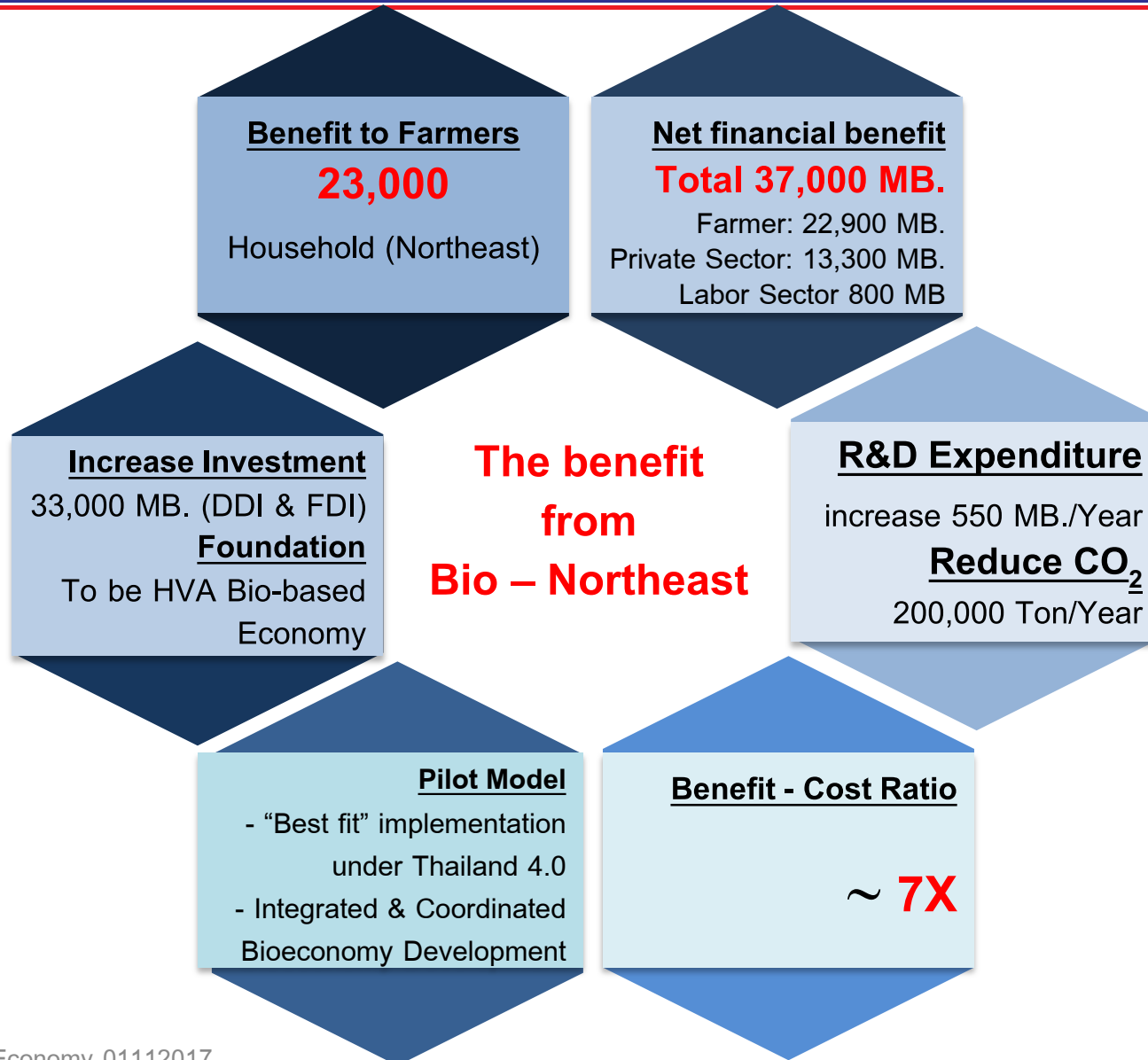


Privileges

Non-Tax Privileges
Tax Privileges



Expected outcomes for Bio – Northeast in 10 year





Thank You