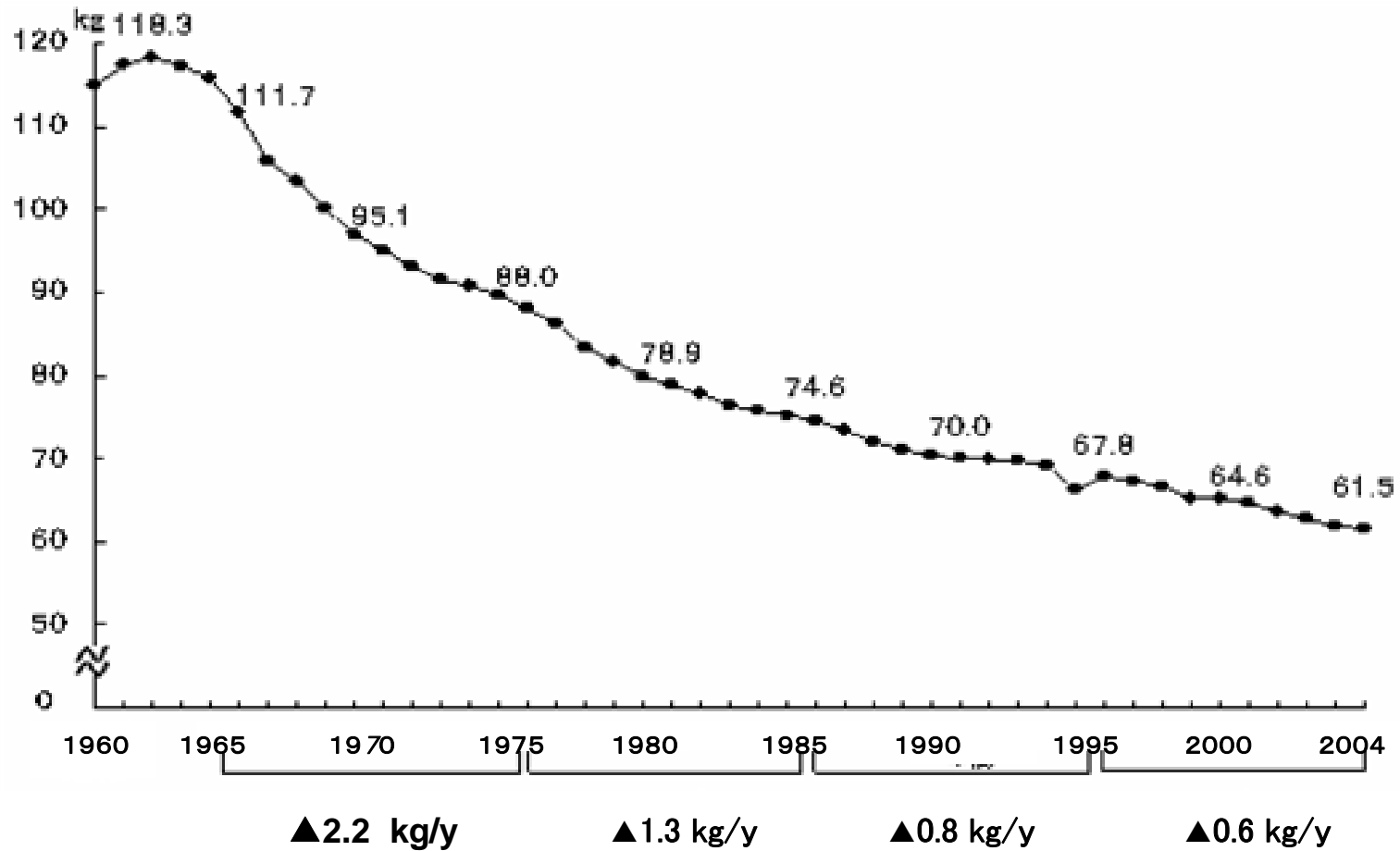

Bangkok, Thailand
December 14, 2010

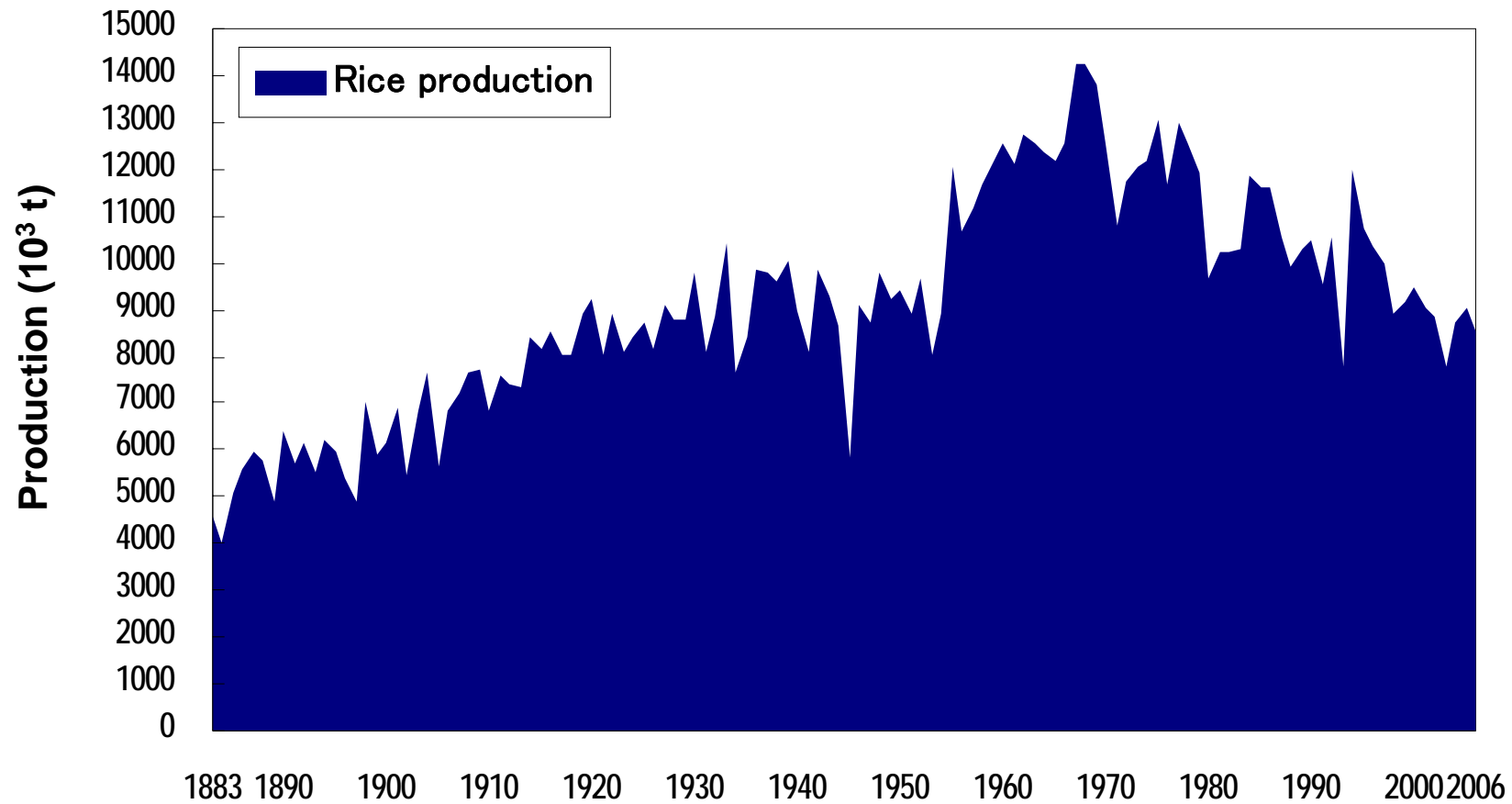
***THE ROLE OF BIOMASS FOR
SUSTAINABLE AGRICULTURE***

Shinya Yokoyama

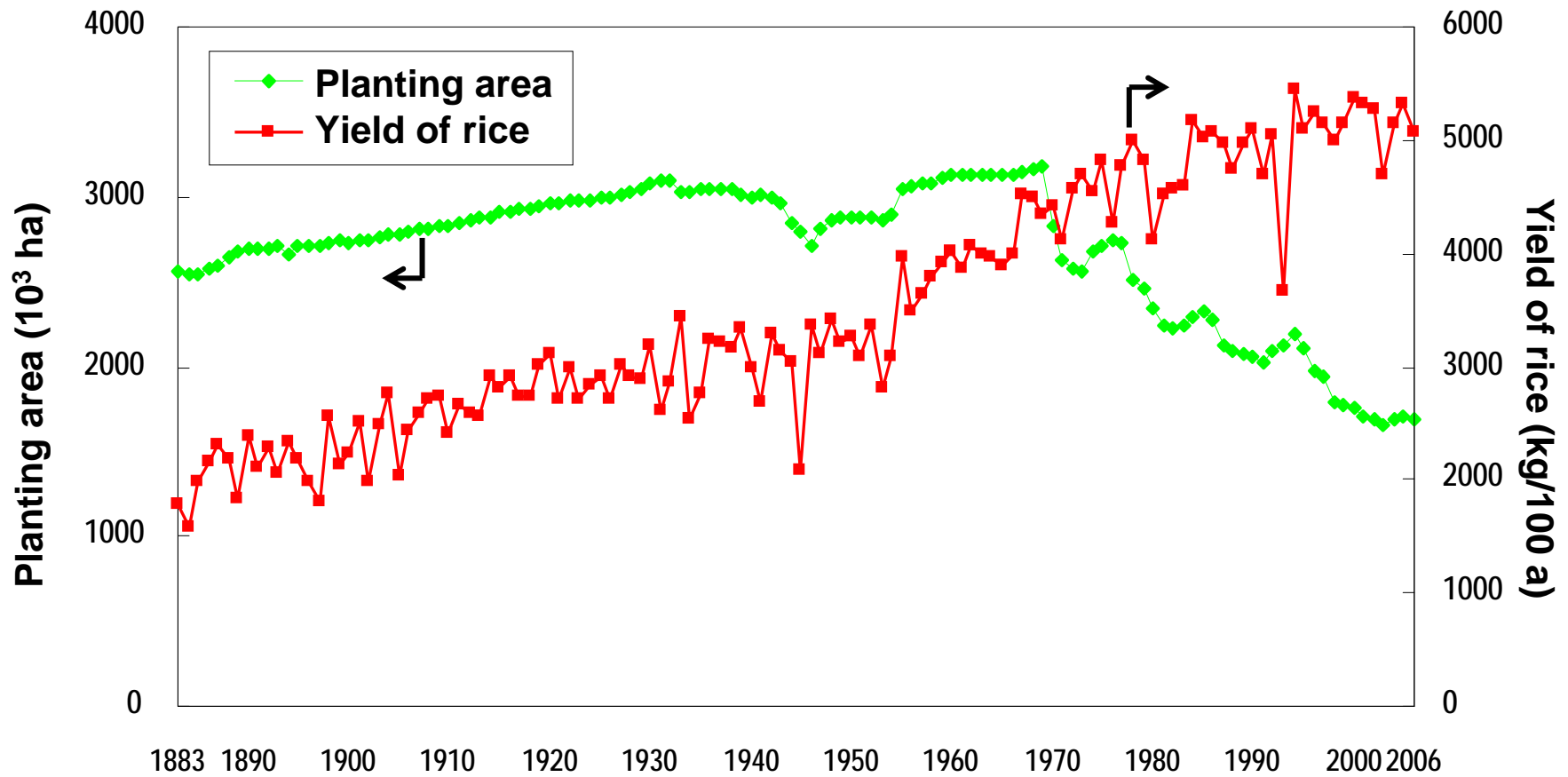
RICE CONSUMPTION PER CAPITA IN JAPAN



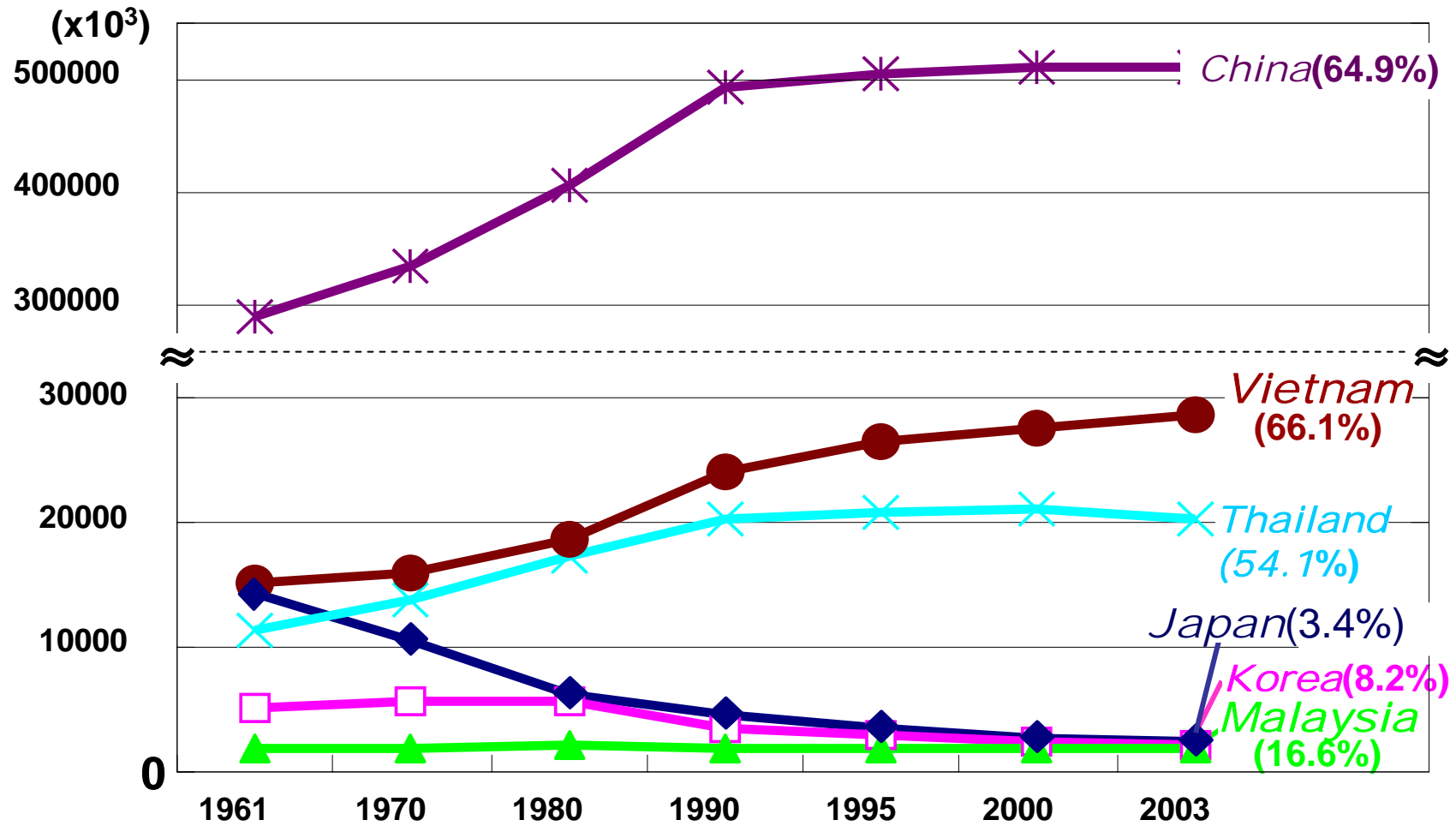
RICE PRODUCTION IN JAPAN (1883~2006)



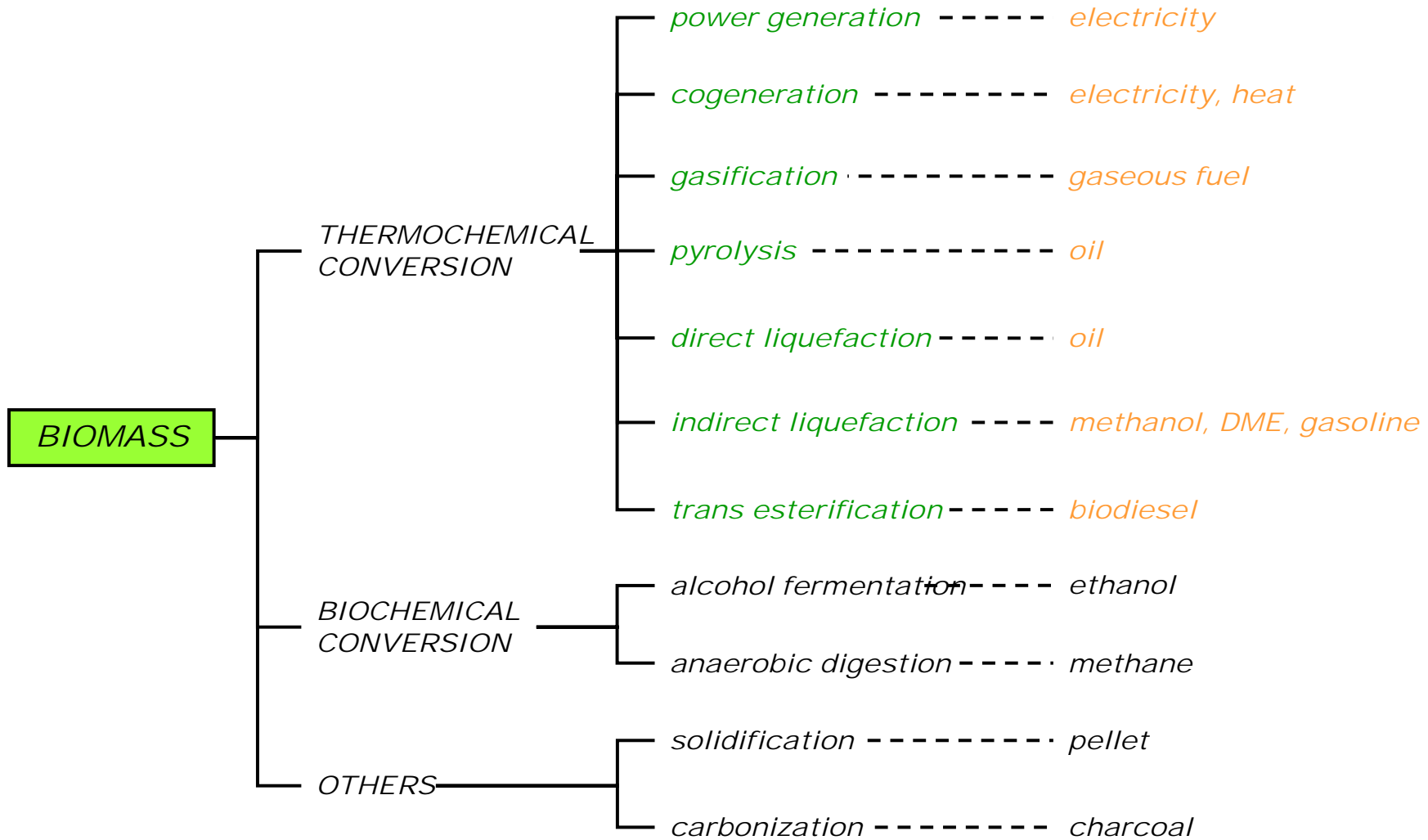
PLANTING AREA AND YIELD OF RICE (1883~2006)



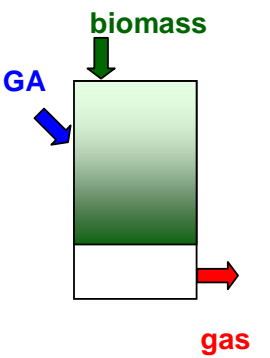
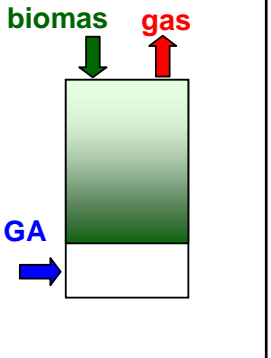
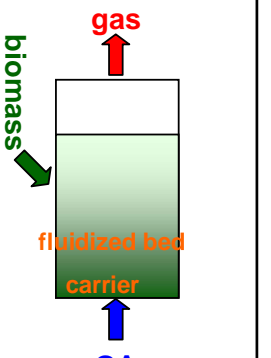
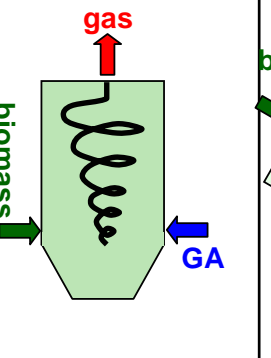
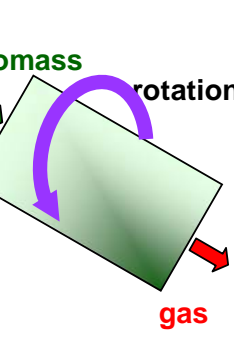
NUMBER OF FARMERS IN ASIA



BIOMASS ENERGY CONVERSION TECHNOLOGY

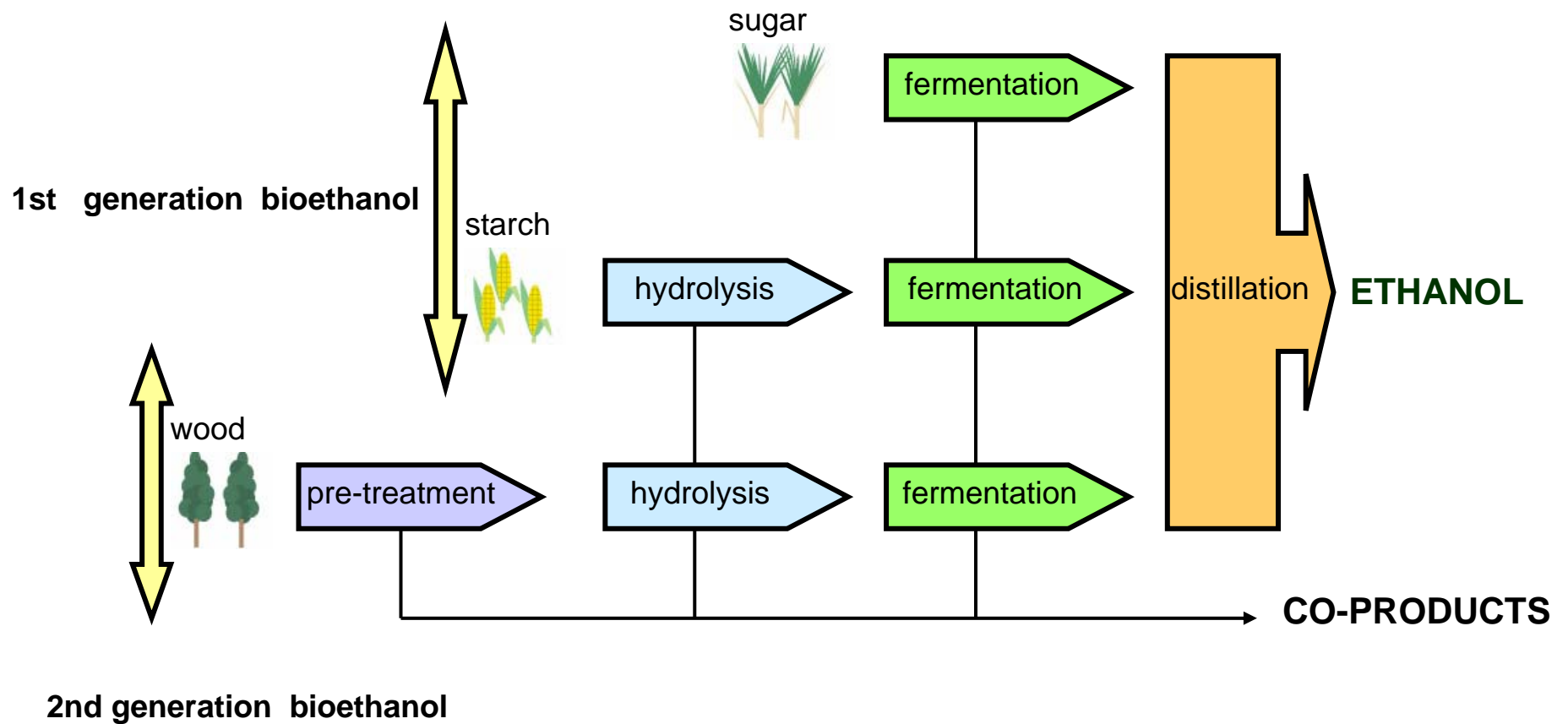


TYPE AND CHARACTERISTICS OF GASIFIER

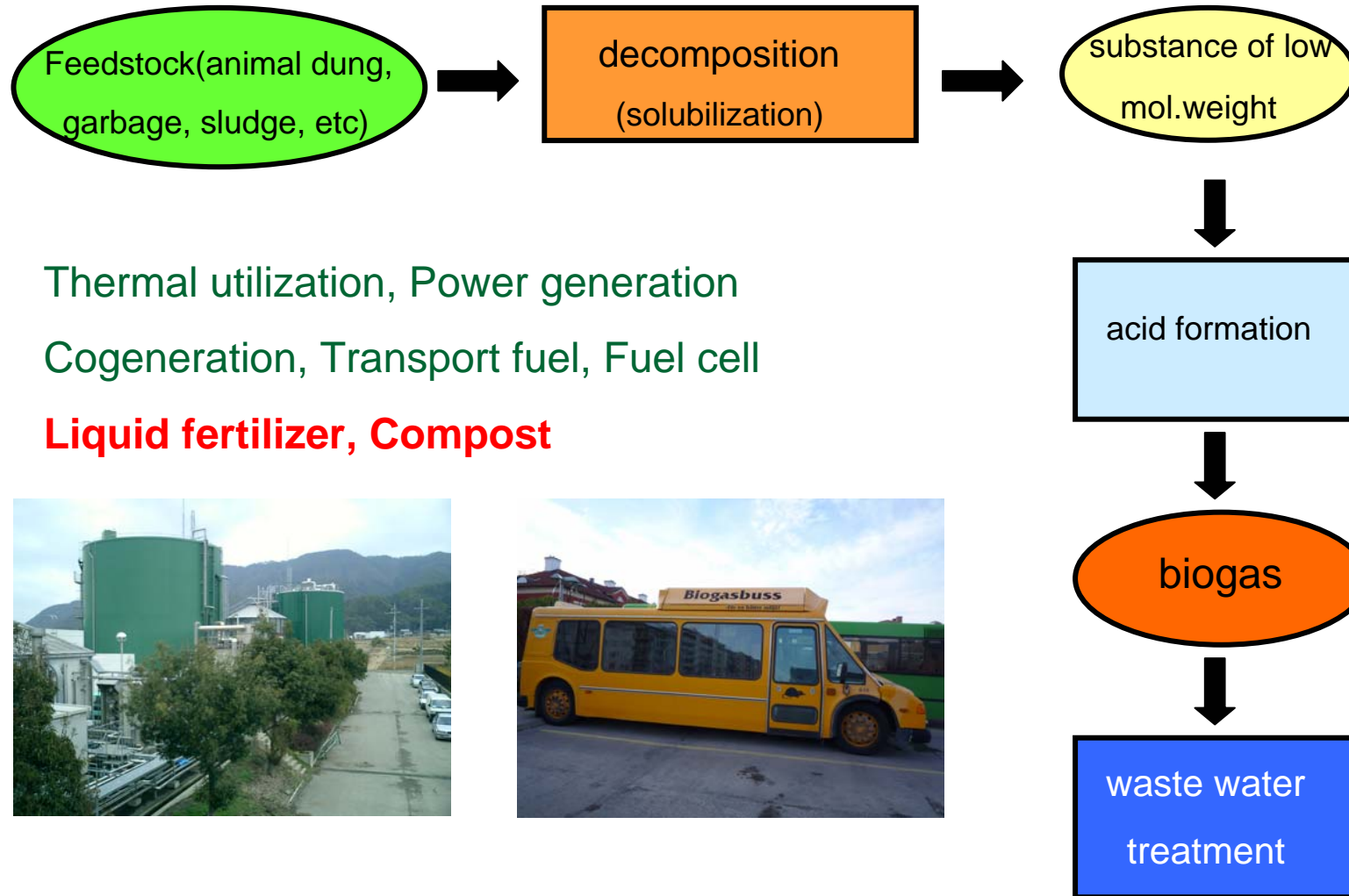
Type	Fixed		Fluidized	Entrained	Rotary kiln
	Down draft	Updraft			
Image					
Feedstock	chip, block	chip, block	chip, block	powder	chip, block
Temperature	700~1100°C	700~900°C	650~900°C	800~1000°C	700~1000°C
Remarks	<ul style="list-style-type: none"> •small scale •small amount of tar •power generation 	<ul style="list-style-type: none"> •small scale •tar •power generation 	<ul style="list-style-type: none"> •big scale •tar •power generation •liquid fuel •bubbling, circulating 	<ul style="list-style-type: none"> •medium, large scale •small amount of tar •easy change of composition •liquid fuel •power generation 	<ul style="list-style-type: none"> •small, medium scale •tar, reduced by after treatment •power generation

GA : gasifying agent

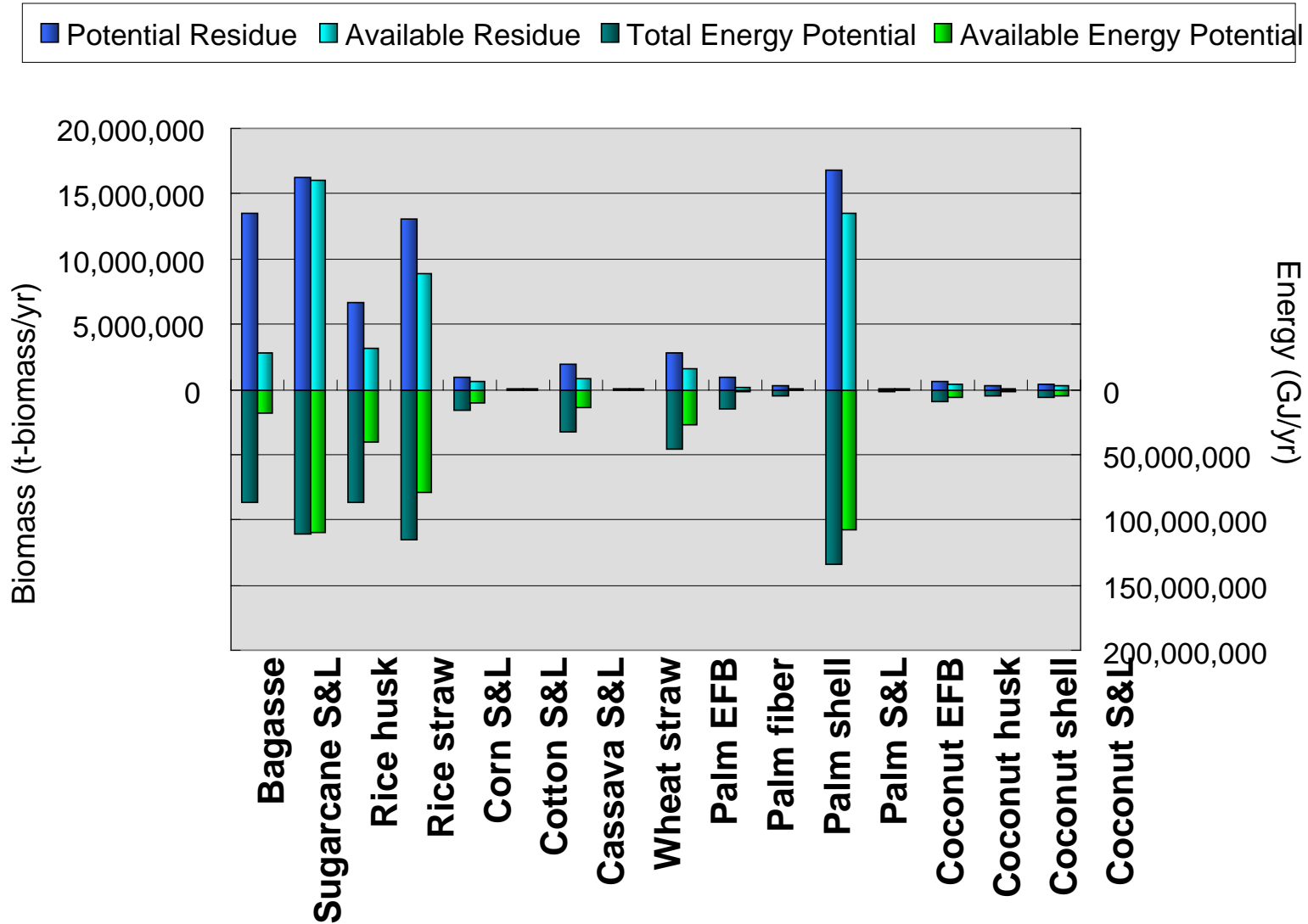
ETHANOL PRODUCTION PROCESSES



BIOGAS PRODUCTION FROM WASTE BIOMASS

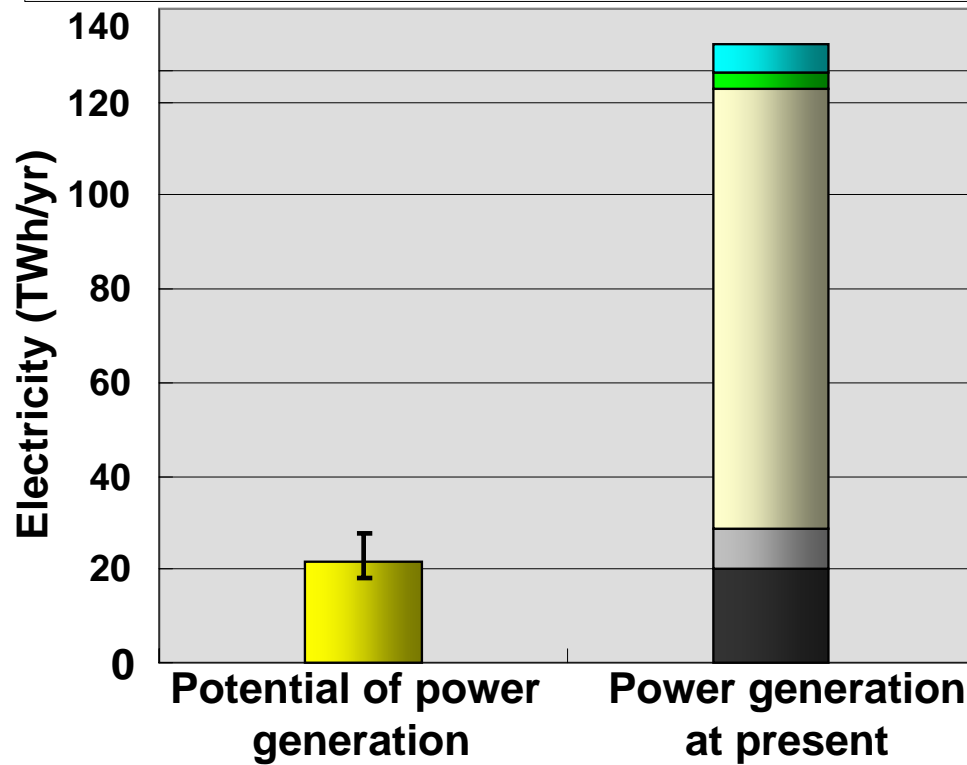


AGRICULTURAL RESIDUES (Thailand)



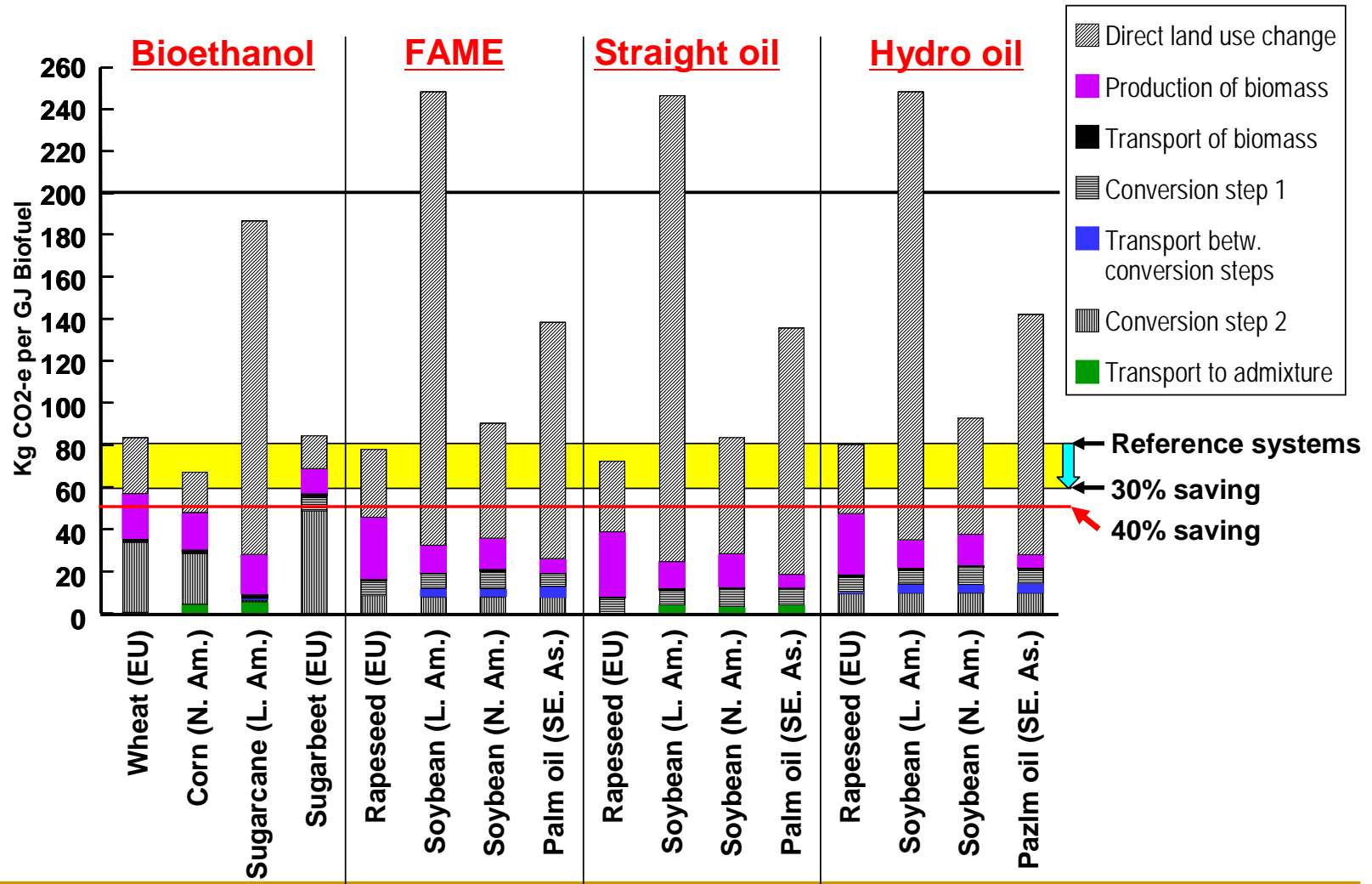
S&L: Stem and leaf
 EFB: Empty Fruit Bunch

POTENTIAL AND CURRENT POWER GENERATION



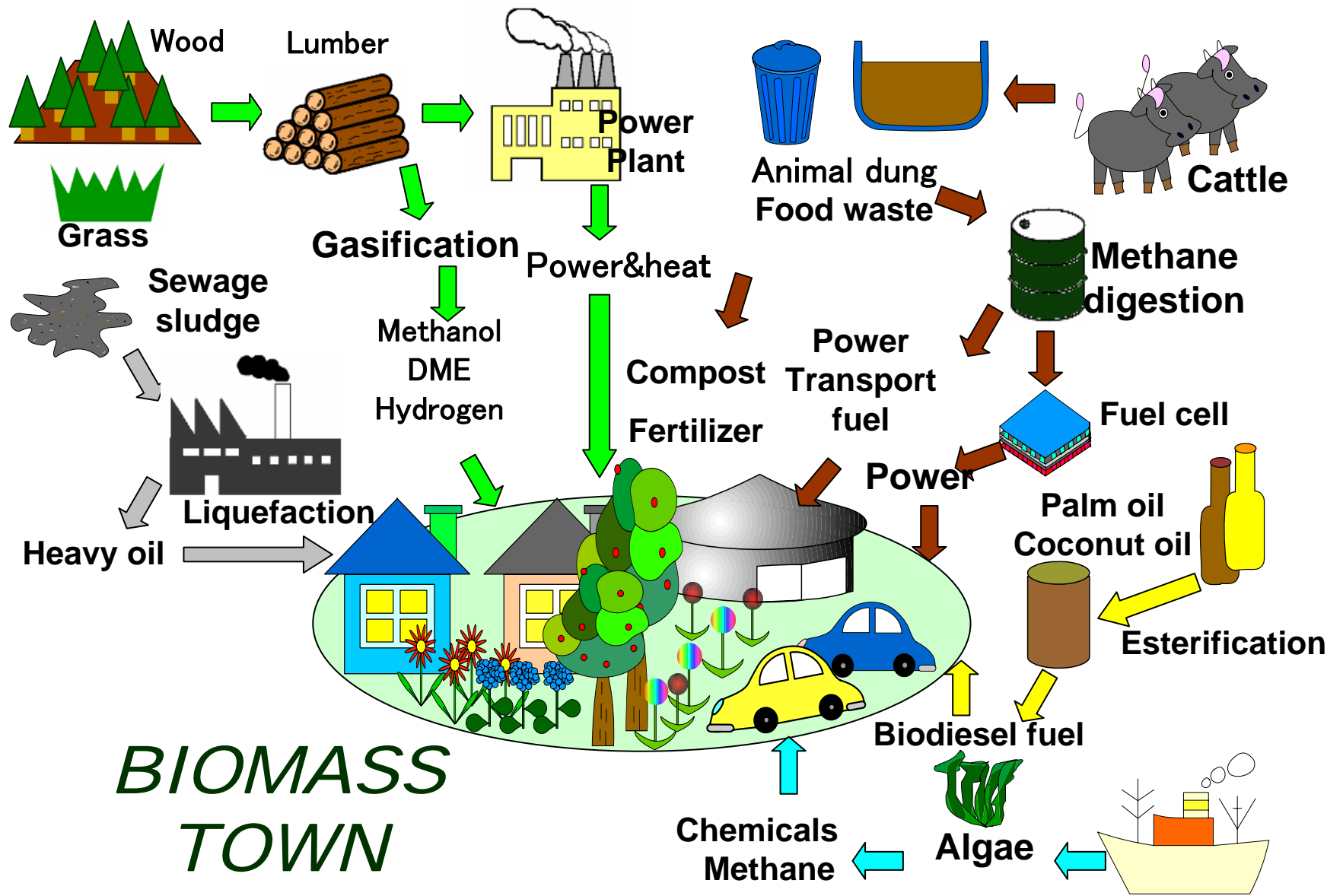
Potential of power generation (TWh/yr)	Total consumption of electricity (TWh/yr)	Alternative rate (%)
21.7	132.2	16.41

DEFAULT VALUES FOR GHG EMISSIONS



SUSTAINABLE AGRICULTURE

- * **GENERAL AND SPECIFIC FEATURES OF AGRICULTURE IN EACH COUNTRY**
 - * **INCREASE OF INCOME OF FARMERS BY PRODUCTION OF GOOD QUALITY OF AGRICULTURAL PRODUCTS**
 - * **INCREASE OF OPPORTUNITY FOR JOB**
 - * **REVITALIZATION OF AGRICULTURAL COMMUNITY BY CREATION OF NEW INDUSTRY**
 - * **ENERGY PRODUCTION FROM AGRICULTURAL WASTES**
 - * **CONTRIBUTION TO GLOBAL WARMING MITIGATION**
 - * **INTERNATIONAL COLLABORATION**
-



Thank you very much

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