Cocoa Biomass (CPH) for Rural Sustainability in Ghana

Group A
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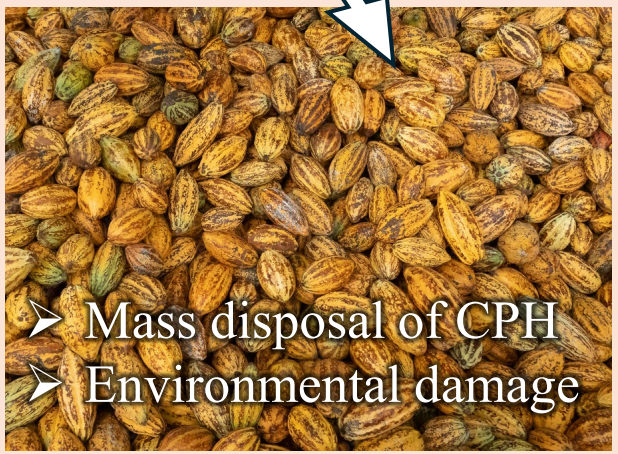
Enrique Antonio Choccare Gutierrez Advisor: Suguru Noda

◆ Challenge in rural Ghana

- Cocoa pod husks
- Cocoa beans
- Raw materials for chocolate
- A key industry in Ghana



- Mass disposal of CPH
- Environmental damage

- Deforestation
- Energy Shortage

◆ Proposal

Cocoa Pod Husks

Drying

Pyrolysis

Energy reuse

Syngas
Bio oil

Biochar briquettes

For domestic fuel

Soil improvement

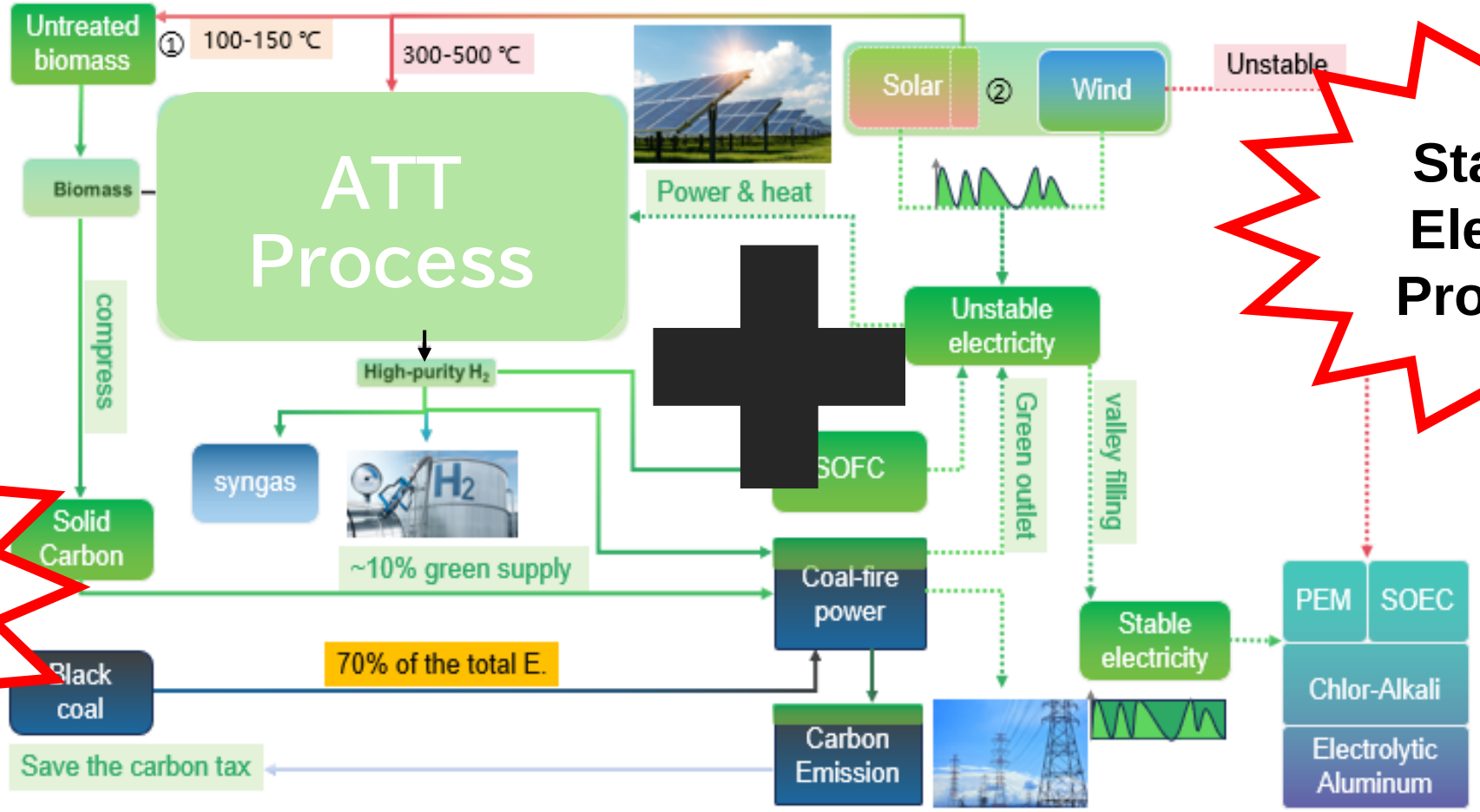
Team B

WCCE 12th | APCChE 2025

Coupling fluctuating renewable energy with biomass via alkaline heat treatment to achieve near-zero emissions

Prof. Satoko, David, Yvsen, Yiwei, Weiyi, Moeno, Ryusei

H_2 Production by Coupling Biomass



Stabilized Electricity Production

Biomass Utilization for Enhancing SDG 12 : Responsible Consumption and Production

Soma TANAKA, Aymen Hadi, BAI Yunpeng, Siew Feng DONG, PAN Yanan, Yuto Kimura

Status

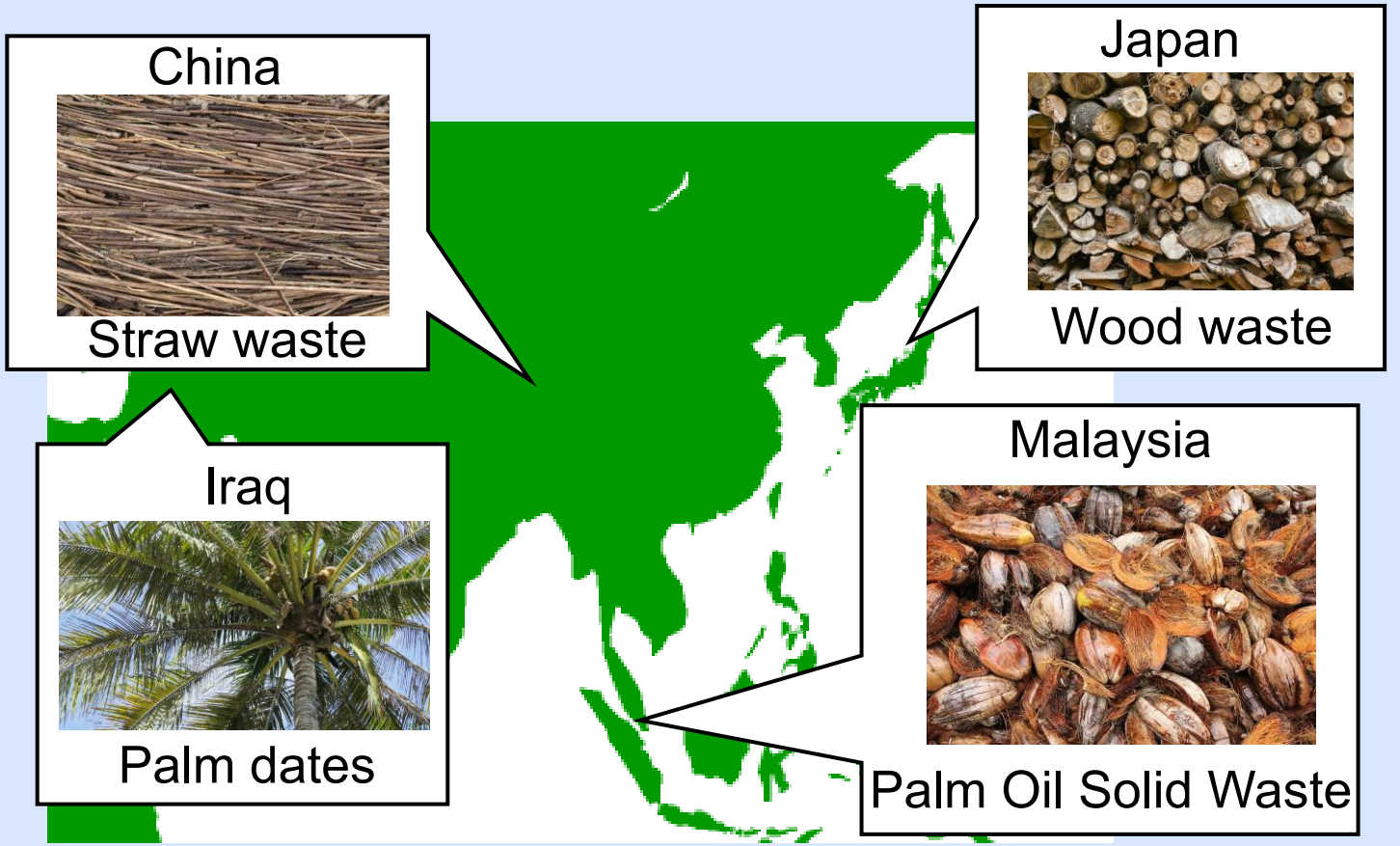
Solid waste from agriculture[1]:
9.78 billion [t/year]

Outlook

Potential amount for energy[2]:
4.3–9.4 billion [t/year]

Equivalent to 3–14% of the global energy supply[2]

Objective



Proposal of the potential usage of agricultural waste in each country

[1] https://www.unep.org/interactives/beat-waste-pollution/ [2]GLOBAL BIOENERGY STATISTICS 2019, World Bioenergy Association

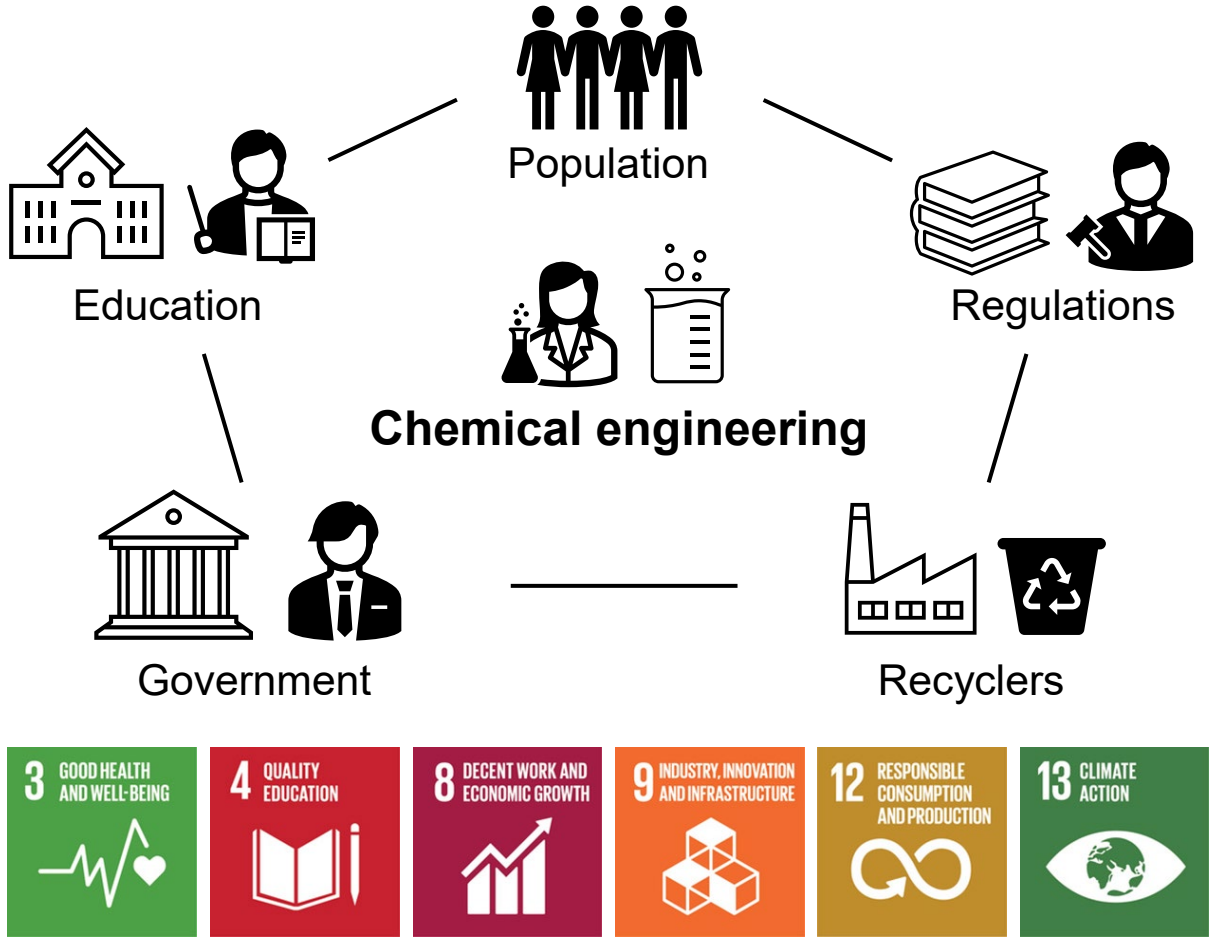
Breaking the Cycle: A Framework to Combat Informal Lead-acid Battery Recycling

Akniyet Zhanuzak, Bowen CHEN, Czarina Ann ESPERA, Hibiki Ogura, Jan Erik Ludorf, Kosuke Nemoto, Miyang Huang, Shi Hongchang, and Xinyu Jin (Advisor: Eri Amasawa)

Lead-acid battery

Problems with informal recycling

Framework



Conversion of Fish Oil Extracted from Tuna Processing Waste to Biodiesel in the Philippines

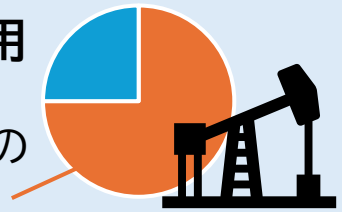
Group E: Aoi Muronosono, Zihan Guo, Chryss Anika Bersabal, Haruka Kubota, Hendrick Tafadzwa Chikwanha
(Advisers) Mitsuo Yamamoto, Yulina Hane, NoorAshrina A. Hamid

提案内容　フィリピン国内でのマグロ廃棄物を活用したバイオディーゼルの生産

背景　フィリピンにおける課題

化石燃料の使用

エネルギー供給の
75%以上



水産加工における廃棄物

同時に解決

環境・経済・
社会的メリット

評価　抽出可能な年間バイオディーゼル量を推算

マグロ漁獲量 ▶ 廃棄量 ▶ 廃棄物中の粗油量 ▶ トリグリセリド量 ▶ FAME（バイオディーゼル）量

5.9×10^4 t

エネルギー換算で、フィリピンの
年間CO_2排出量の0.09%を削減可能

展望

マグロの種類ごとの推算

収穫時期を考慮した年間のプロセス運用