前国王ラーマ9世の「足るを知る経済思想」と、タイの強みである農業・生物資源を基にバイオ・循環型・グリーン経済（BCG）モデルを導入、「バイオマス燃料と未来の材料」を開発

From our King Rama 9 on sufficiency economy philosophy and our Thailand strength in agriculture and the Biological agriculture resource, The Bio, Circular, Green (BCG) Economy model is applied on our "Biomass fuel & Materials Product for Future"

Nitto-Freshco Biofuel

バイオマス燃料＆未来の材料

Biomass Fuel & Materials
Products for Future

Nitto-Freshco Biofuel

地球規模の気候変動

Global Climate Change

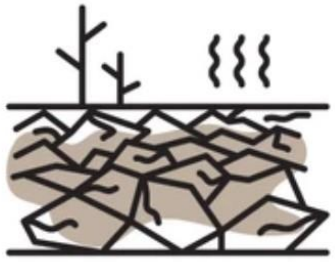

Earth's rising temperature


Earth's poles ice melting


Rising seas & coastal flooding

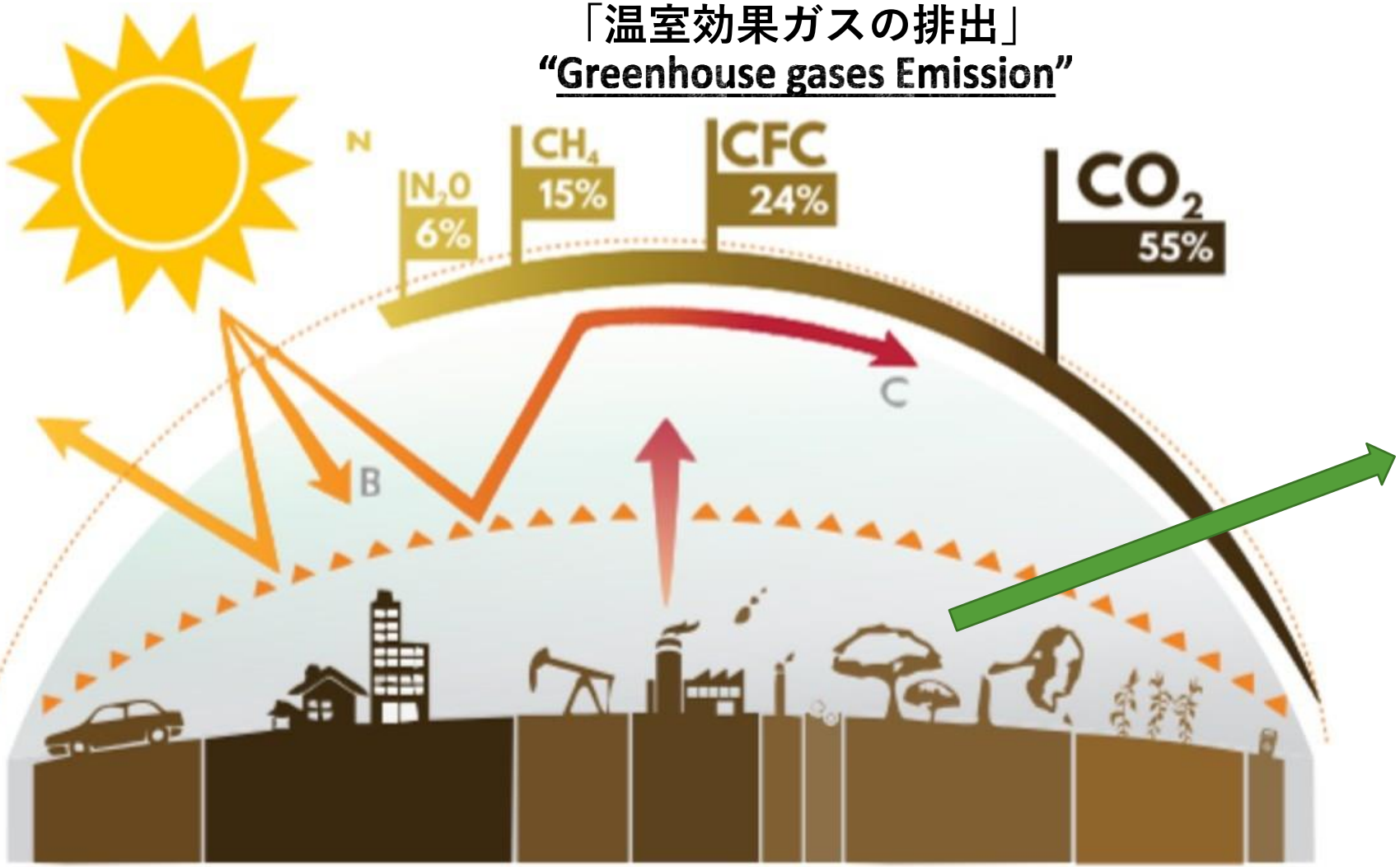

More intense heat waves

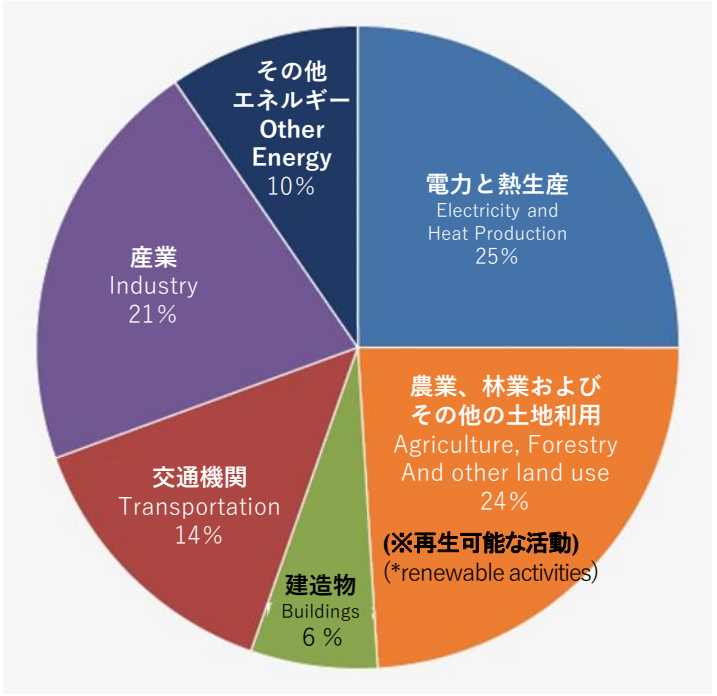

Drinking water shortages


Severe drought

気候変動の主な原因 Major causes of climate change

「温室効果ガスの排出」
“Greenhouse gases Emission”

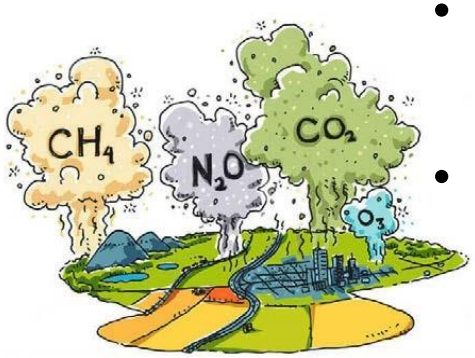




「GHG排出量の推移」
“GHG emission activities”

気候変動の主な原因
Major causes of climate change

「化石燃料」
“Fossil Fuel”



- **物質の地中における圧縮や加熱により、石炭や天然ガス、石油などの化石燃料となる**
  Over time, the material is compacted in the Earth and heated, and the material turns to coal, natural gas, or oil which used as fossil fuel.
- **化石燃料の使用は、気候変動や地球規模の大気汚染の主な原因となっている**
  Using fossil fuels is a major cause of global emission and climate change.

国連気候変動枠組条約第26回締約国会議のゴール
COP 26 GOALS

「1.5℃目標を実現可能なものとするために、
今世紀半ばまでに世界規模でネット・ゼロを達成する」

"Secure global net zero by mid-century and keep 1.5 degree within reach"

「各国は今世紀半ば（2050年）のネットゼロ達成に向け、
意欲的な2030年排出量削減目標を提示するよう求められている」

" Countries are being asked to come forward with ambitious 2030 emissions reductions targets that align with reaching net zero by the middle of the century (2050)

**これらのストレッチ・ターゲットを達成するために、
各国は以下を行う必要がある**

To deliver on these stretching targets, countries will need to:

- **石炭の段階的な廃止を加速**
  Accelerate the phase-out of coal
- **森林破壊を抑制**
  Curtail deforestation
- **電気自動車への切り替えを加速**
  Speed up the switch to electric vehicles
- **再生可能エネルギーへの投資を促進**
  Encourage investment in renewables.

TOGETHER FOR OUR PLANET

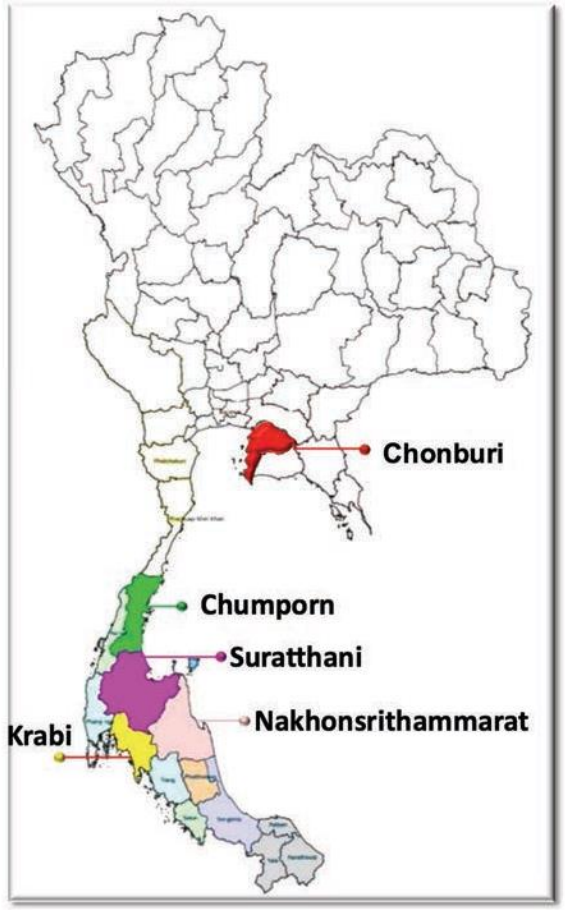
再生可能エネルギーと素材が
もたらす未来への提言

Renewable Energy & Materials
Solutions for Future

パームからバイオマス素材へ

Palm to Biomass materials

パーム油プランテーションエリア
Palm Oil Plantation Area



Nitto-Freshco Biofuel

NFB Chonburi Factory

Nitto-Freshco Biofuel Co.,Ltd.
E-mail : **nittofreshcobiofuel@gmail.com**

パームから燃料になるまで
Palm to Fuel

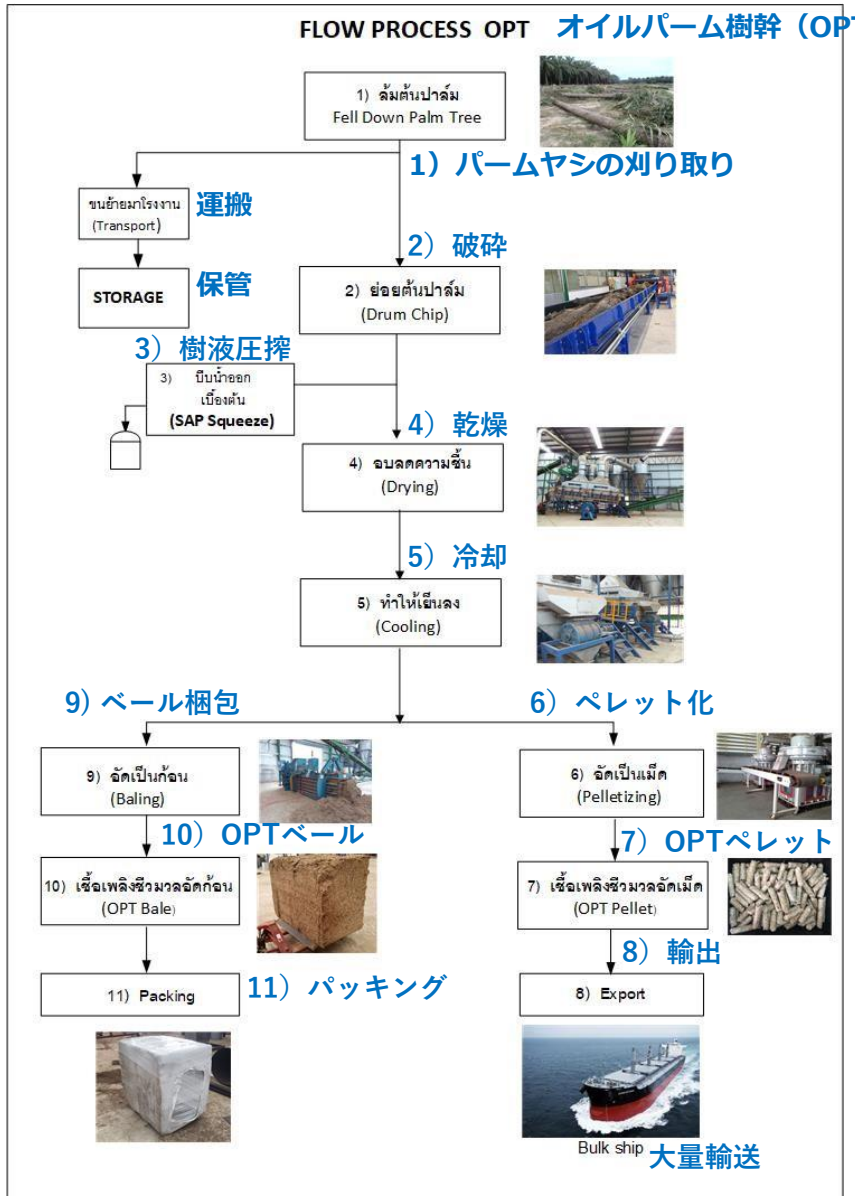
Nitto-Freshco Biofuel

プラント PLANT → チップ化 CHIP → 圧搾 SQUEEZE → 洗浄 WASH → 乾燥1+乾燥2 DRY1+DRY2 → 冷却+貯蔵 COOL+STOCK → ペレット化 PELLET → 市場 MARKET

- 樹液1 Sap 1
  - 排水 Wastewater
  - 肥料 Fertilizer
  - 高付加価値製品 High Value Products
    - 乳酸 Lactic Acid → バイオプラスチック Bio Plastic
    - グリコール酸 Glucoic → バイオバッテリー Bio Battery
    - バイオガス Biogas → エタノール/メタン（CH4） Ethanol/CH4
- 樹液2 Sap 2
- 新商品 New Products
  - 水素 H_2
  - アンモニウム NH_4
  - セルロース Cellulose

Nitto-Freshco Biofuel

パームからバイオマスになるまで
Palm to Biomass Process



Analysis Result

Certified Measure Issue Number 03-0677-1

18 August 2021

Here by reporting the results of chemical analysis that were ordered on 28 July 2021.

Suncoh Environmental Research Center Co., Ltd.
Head Quarter Office & Certified Laboratory
1-4-1 Tamagawa, Chofu-shi, Tokyo
Tel. 042-482-6634
Certified Libratory Registration Number
Tokyo 523
Certified Environmental measurer
Masanobu Take

Registration number 6829

Title : Analysis of OPT Pellet

Analysis Item : OPT Pelle from NFB Thailand

Sample Location : –

Sample Date : –

Sampler : Request person

Analysis Type : Fuel analysis

No.	Items	Units	Samples: OPT Pellet	Indication base	Analysis Methods
1	Higher heating calorific value	kJ/kg	17,650	a.r	JIS Z 7302-2
2	Higher heating calorific value	kcal/kg	4,220	a.r	JIS Z 7302-2
3	Higher heating calorific value	kJ/kg	18,650	d.b	JIS Z 7302-2
4	Higher heating calorific value	kcal/kg	4,460	d.b	JIS Z 7302-2
5	Lower heating calorific value	kJ/kg	16,260	a.r	JIS Z 7302-2
6	Lower heating calorific value	kcal/kg	3,880	a.r	JIS Z 7302-2
7	Lower heating calorific value	kJ/kg	17,330	d.b	JIS Z 7302-2
8	Lower heating calorific value	kcal/kg	4,140	d.b	JIS Z 7302-2
9	Total moisture content	%	5.4	a.r	JIS Z 7302-3
10	Inherent moisture	%	2.0	a.d	JIS Z 7302-3
11	Ash	%	3.3	a.d	JIS Z 7302-4
12	Volatile matter	%	79.9	a.d	JIS M 8812
13	Fixed carbon	%	14.8	a.d	JIS M 8812
14	Carbon	%	49.4	d.b	JIS Z 7302-8
15	Hydrogen	%	5.86	d.b	JIS Z 7302-8
16	Nitrogen	%	0.36	d.b	JIS Z 7302-8
17	Oxygen	%	44.37	d.b	The calculation value
18	Sulfur	%	0.04	d.b	JIS Z 7302-7
19	Combustible sulfur	%	0.01	d.b	JIS M 8819
20	Chlorine	%	0.04	d.b	AOAC (2019) 937.09
21	Sodium	%	0.05	d.b	AOAC (2019) 968.08
22	Potassium	%	0.13	d.b	AOAC (2019) 968.08
23	The bulk density	g/cm^3	0.72	a.r	JIS Z 7302-9
24	HGI	–	19.0	----	JIS M 8801 Based.
25	Mechanical durability	%	91.2	a.r	Wood pellet quality standard 6.5

Remarks a.r : As received basis indication , d.b : Dry basis indication , a.d : Air dried base indication

The amount of sample used for measurement of HGI : 25.0g

This proof of the measurement certificate has stamped out"S-ERC"up.

Regist.No.21-0812 **Investigation No.2107-7069**