



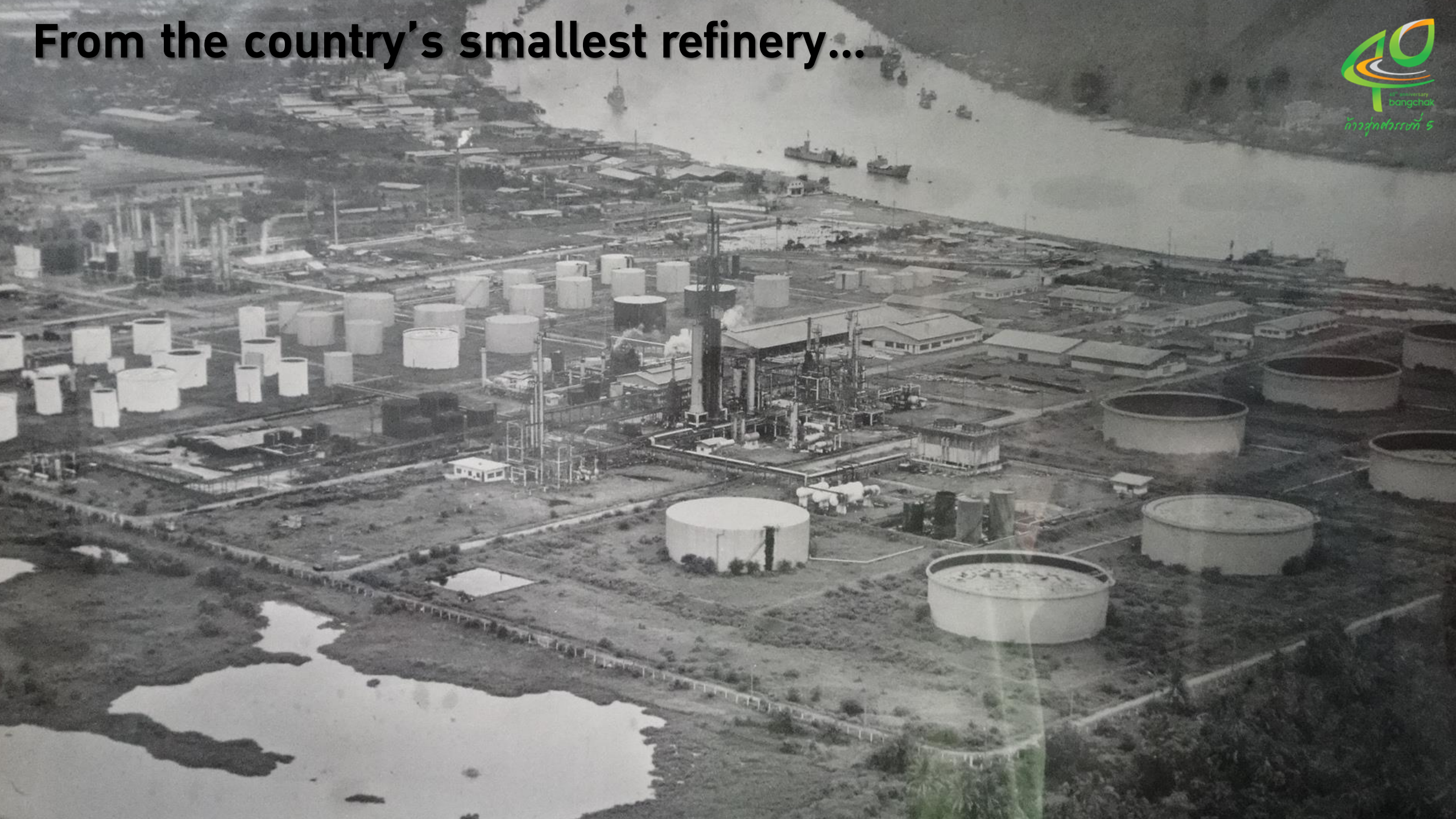
Business for Good: Spotlight on Sustainable Business Models

NDC 2024

4 July 2024

Gloyta Nathalang
Senior Executive Vice President
Sustainability Management and Corporate Communications
Bangchak Corporation Plc.

From the country's smallest refinery...



Expanding Horizons:

Navigating the Energy Value Chain with Five Dynamic Business Portfolios



Sriracha Refinery

LEGACY

TOUCHPOINT

GREEN PLATFORM

Phra Khanong Refinery

OKEA

Refinery & Oil Trading Business
294 KBD

Marketing Business
Distribution channels through industrial & retail channels
2,219 Service Stations

bcpg Clean Power Business
4 power generation technologies
in 7 countries over the world with 2,038 MW in total

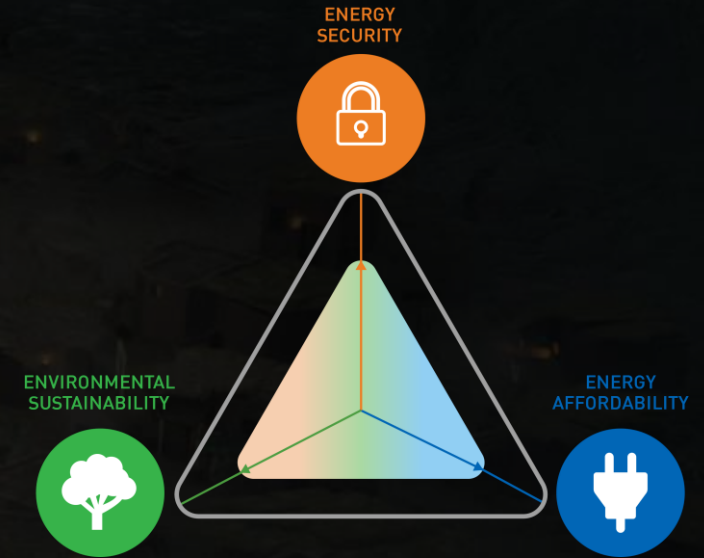
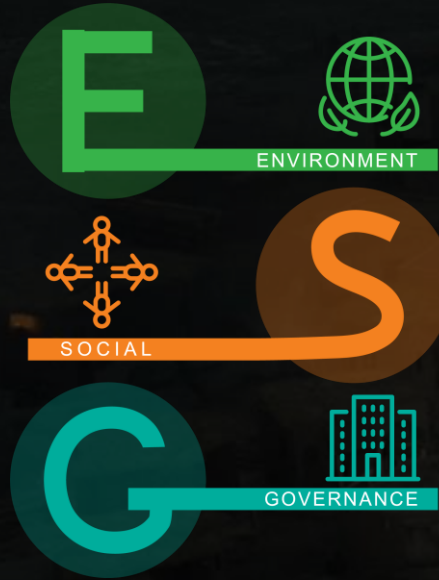
bbgi Bio-based Products

No.1 fully Integrated Biofuel Producer in Thailand with 1.85 ML/D in production capacity

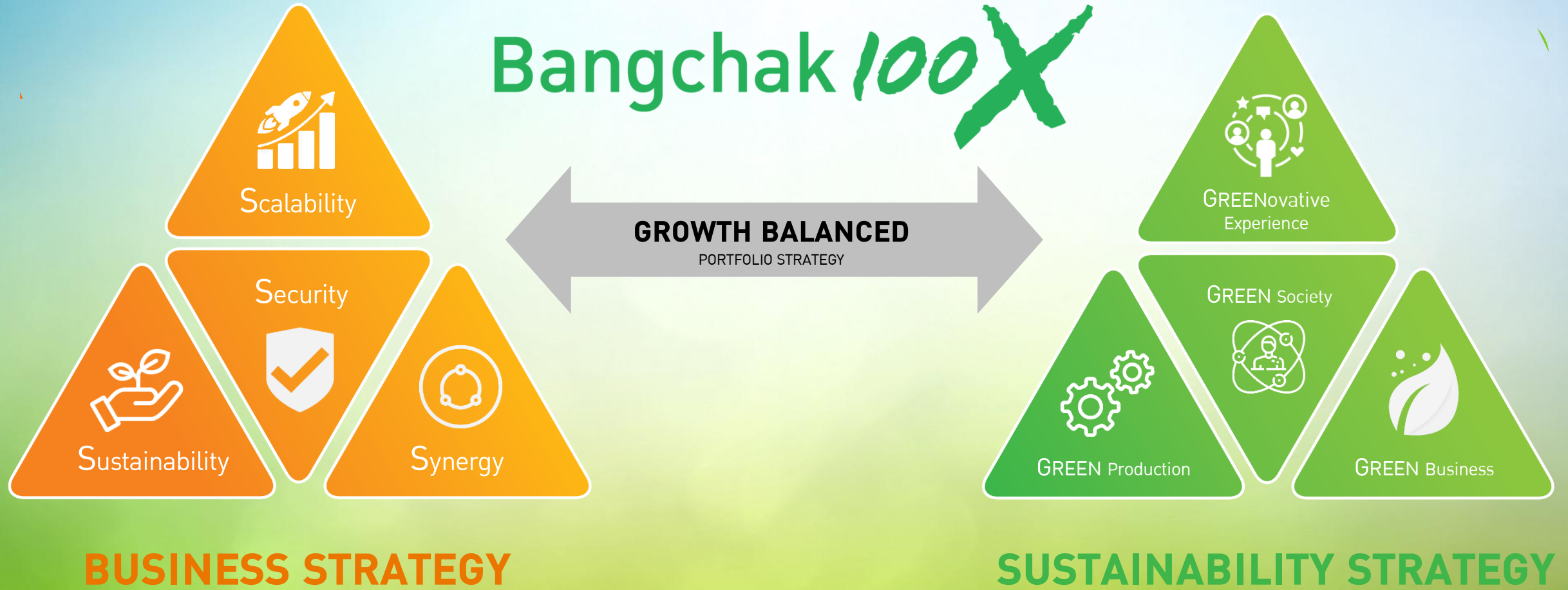
Natural Resources
Norway-based oil & gas company with production capacity of 35-40 KBD in 2024

with 500,000 Tons of Paraxylene
bsrc





STRATEGY FRAMEWORK



4S Business Strategy

Committed to develop sustainable business innovation in harmony with the environment and society through the 4S strategy



S1 Security

Create energy security by focusing on the source of energy

S2 Synergy

Create collaboration to transform and create products and services covering all business groups.

S3 Sustainability

Develop and extend core businesses to achieve growth and sustainability.

S4 Scalability

Build flexibility and focus on seeking opportunities and driving new business in the future (New S-curves) to support long-term growth.

4G Sustainability Strategy



**Green
Business**

**Investing in new
businesses and expanding
existing businesses in
energy and
environmentally friendly
innovations.**



**Green
Production**

**Focusing in
environmentally friendly
and safe operations with
optimal efficiency in
utilization of resources.**



**Greenovative
Experience**

**Creating experiences for
customers of all
generations as
greenovative destination.**



Green Society

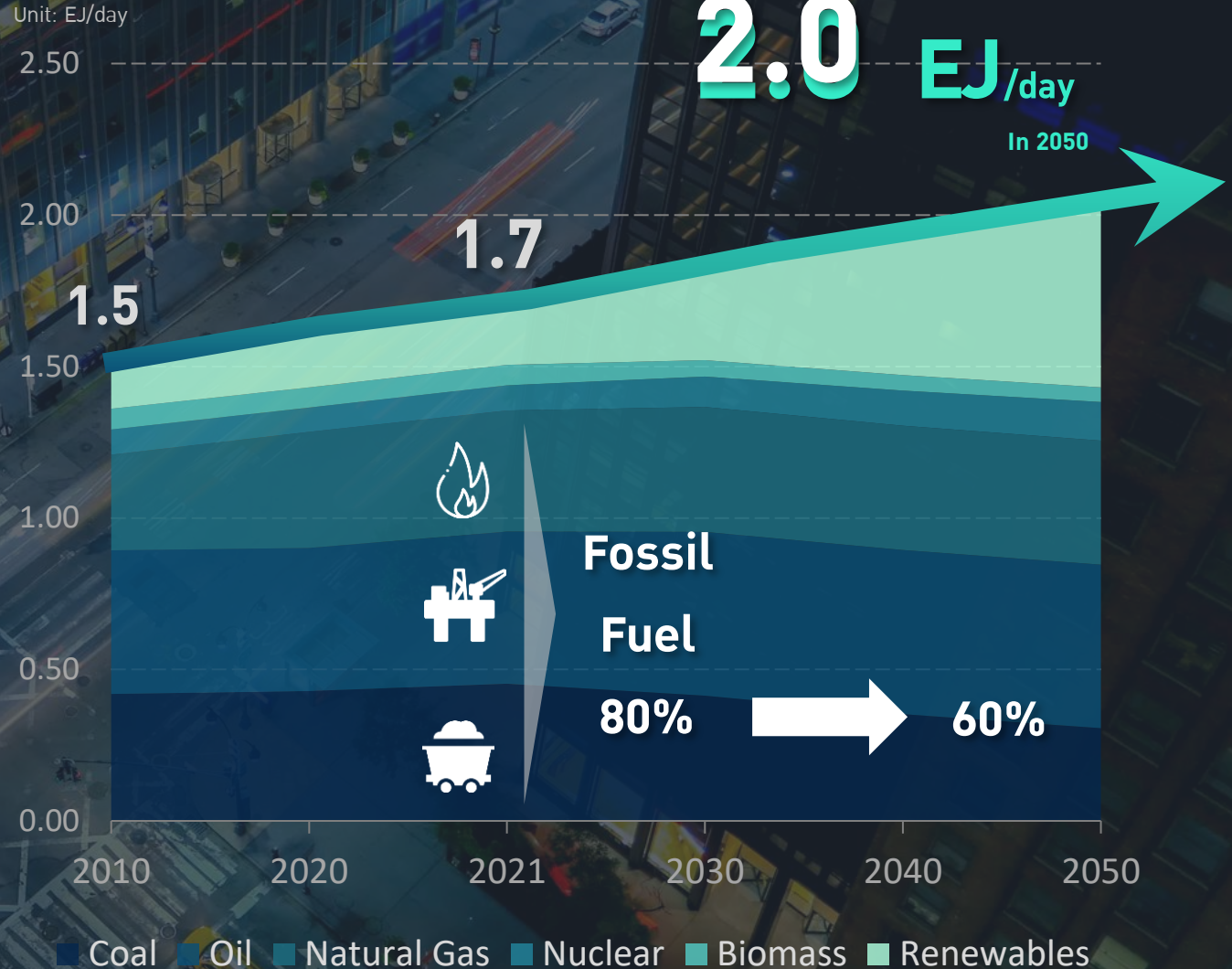
**“Energy in Harmony with
Nature”, striving to
maintain balance in
business in an
environmentally and
socially sustainable way**

Rising Energy Consumption Surges

...amid Renewable Revolution



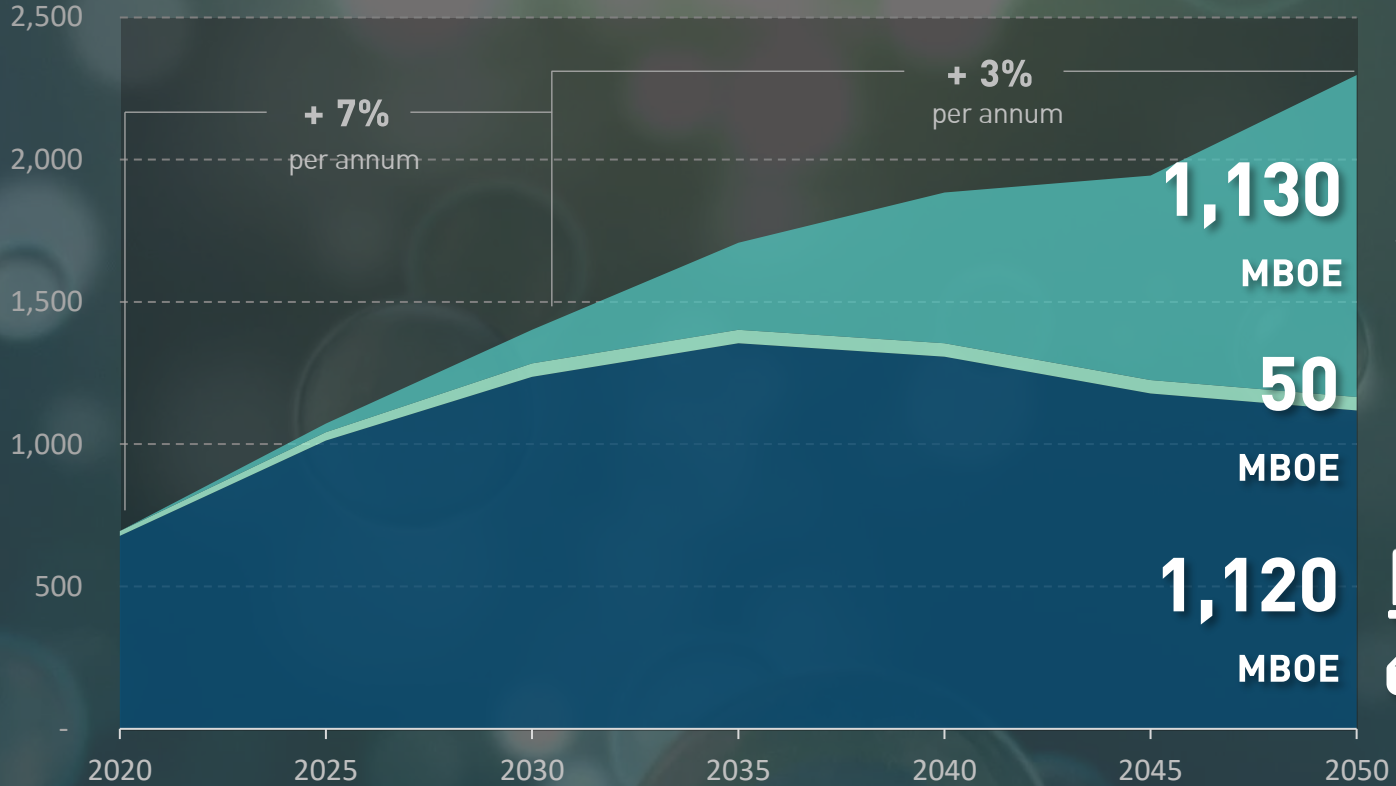
World Primary Energy Consumption



Fueling a Sustainable Future

Accelerating Demand for Green Transport Solutions

Demand by Sector,
Million Barrel Oil Equivalent (MBOE)



almost **Total Demand**
2,300 MBOE by 2050



SAF, e-SAF



LNG, Ammonia



**Green Diesel,
e-Fuels**

Source: McKinsey 2022

Global Challenges



**Technology
Disruption**



**Trade War
& Tech War**



Geopolitics
“Two Wars &
2024 Election”



Global Boiling
“Climate risk &
Climate Action”

Global Key Risks 2024

Global Risk Report 2024

Top 10 risks

2 years



10 years



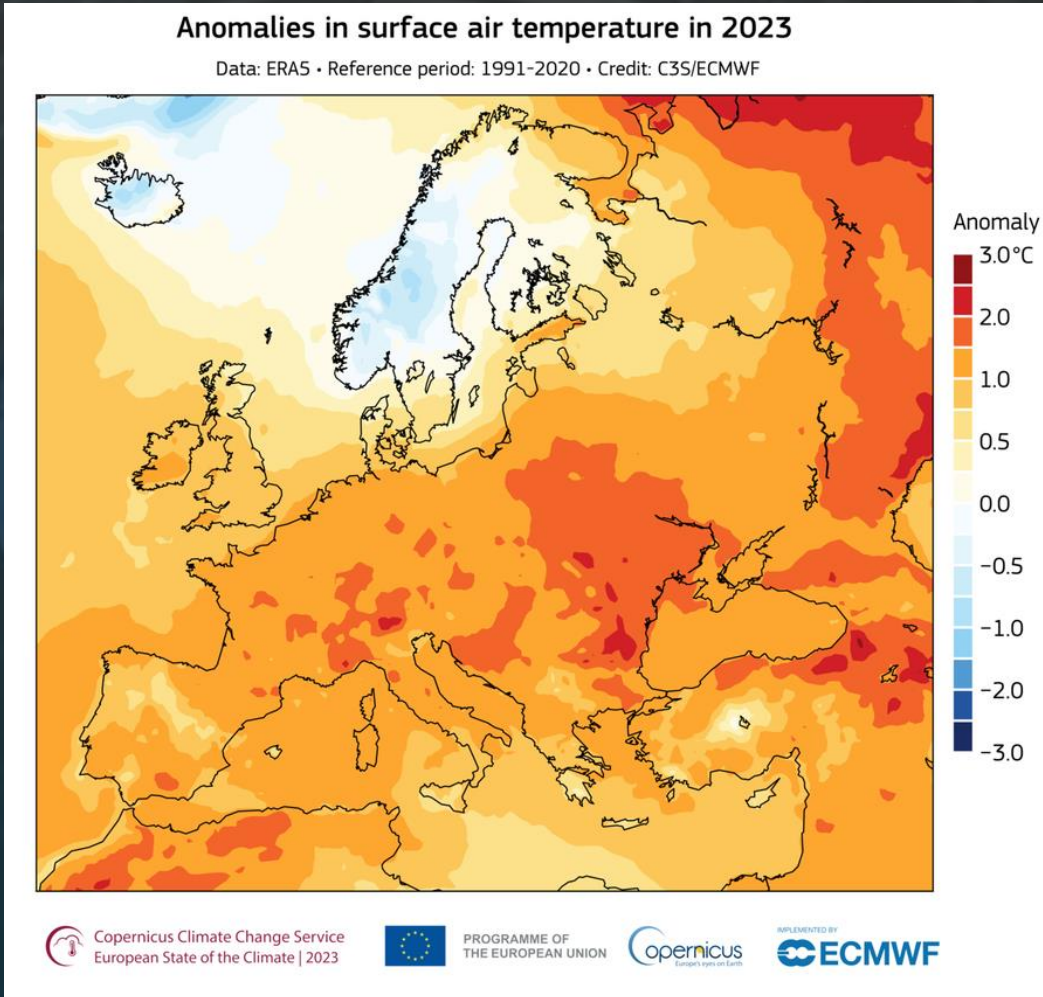
Changing weather conditions and issues related to weather are primary risks.



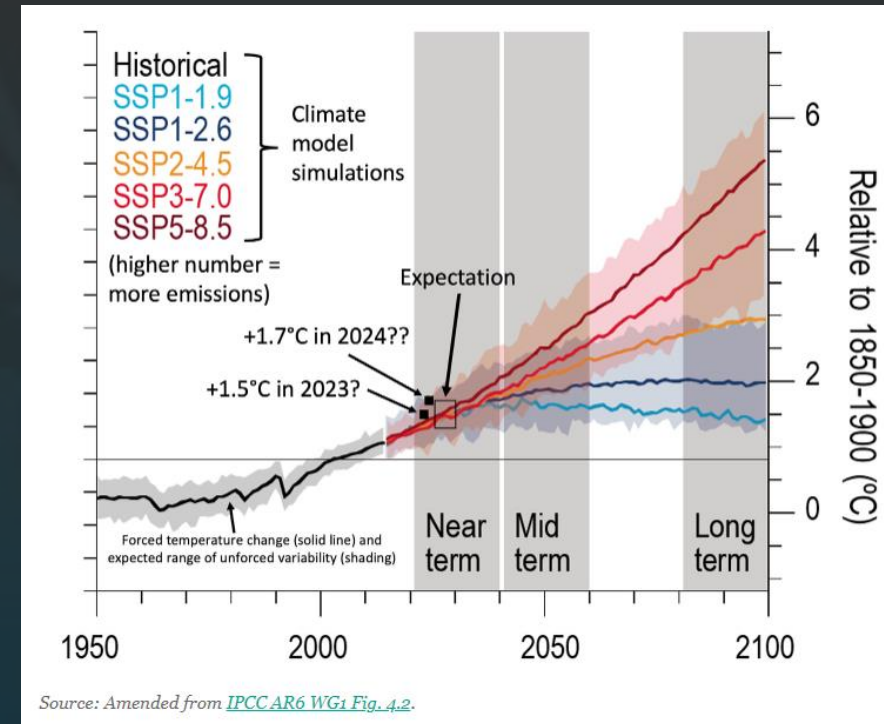
Source: World Economic Forum Global Risks Perception Survey 2023-2024.

From Global Warming to **Global Boiling**

2023 classified as the hottest year



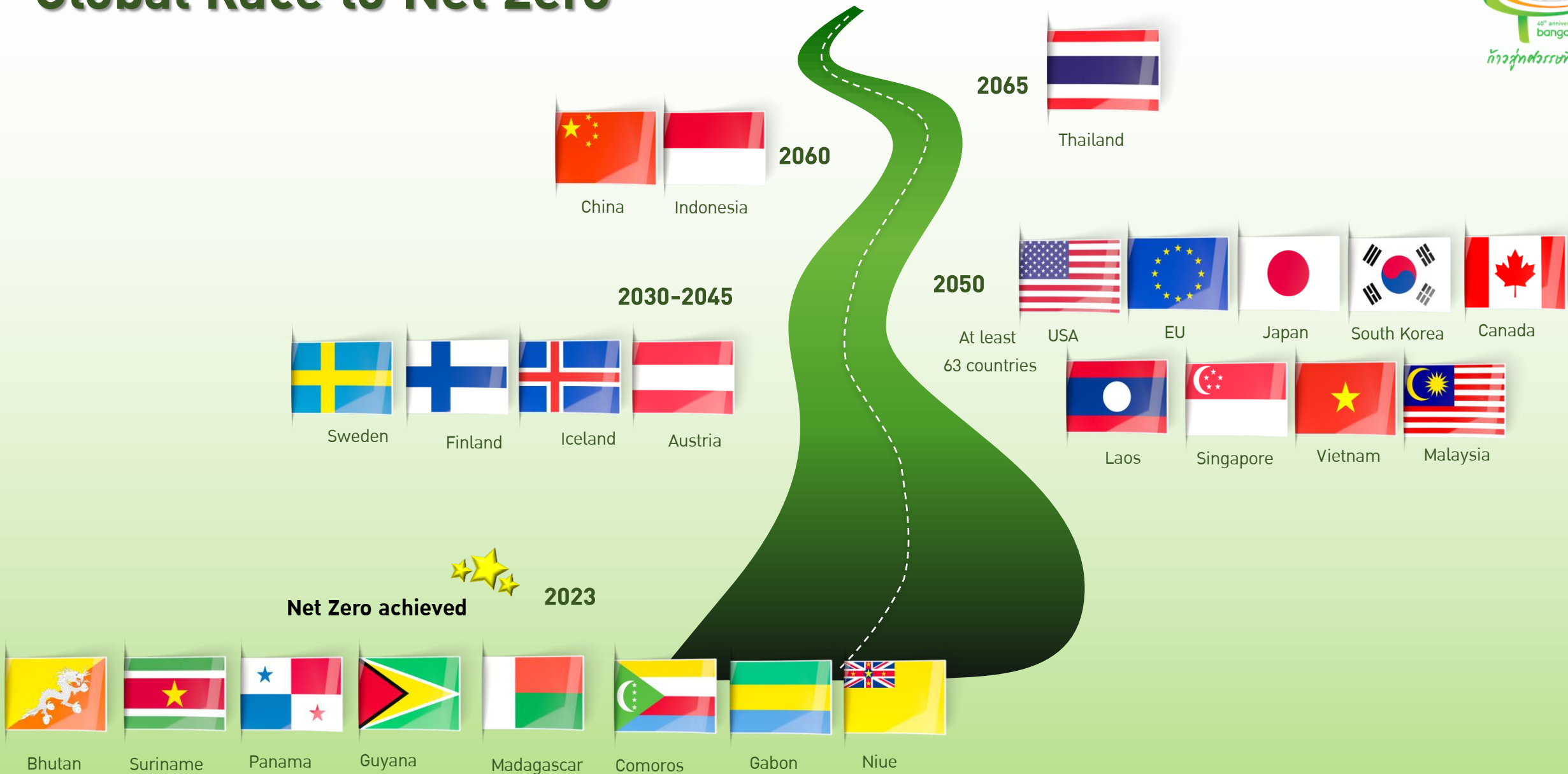
2024 global temperature anticipated to be 1.7 degrees higher than pre-Industrial Revolution (1850-1900)



<https://thebreakthrough.org/blog/global-temperatures-are-spiking>

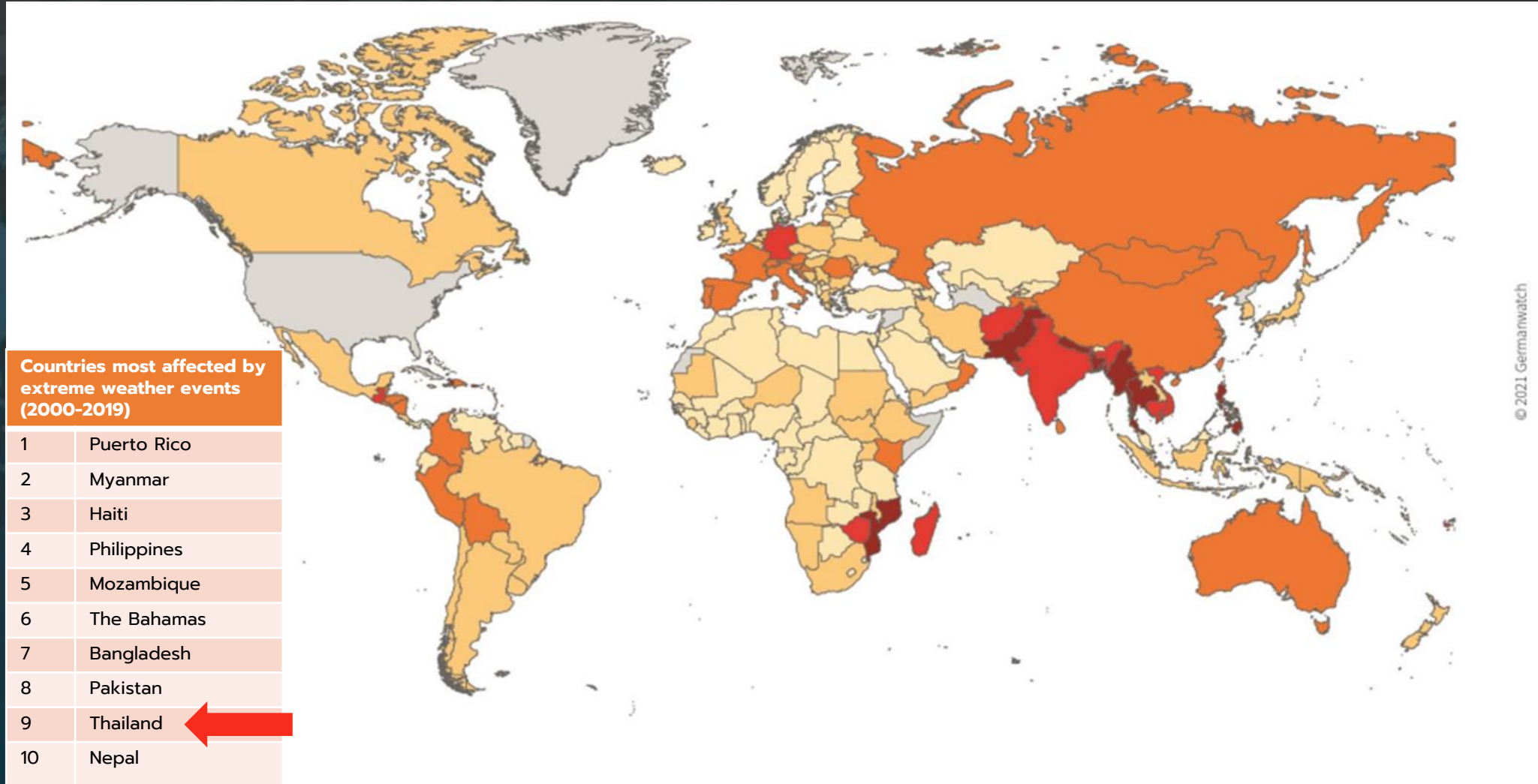
2015 Paris Agreement aimed to limit the temperature increase to 1.5 degrees Celsius.

Global Race to Net Zero

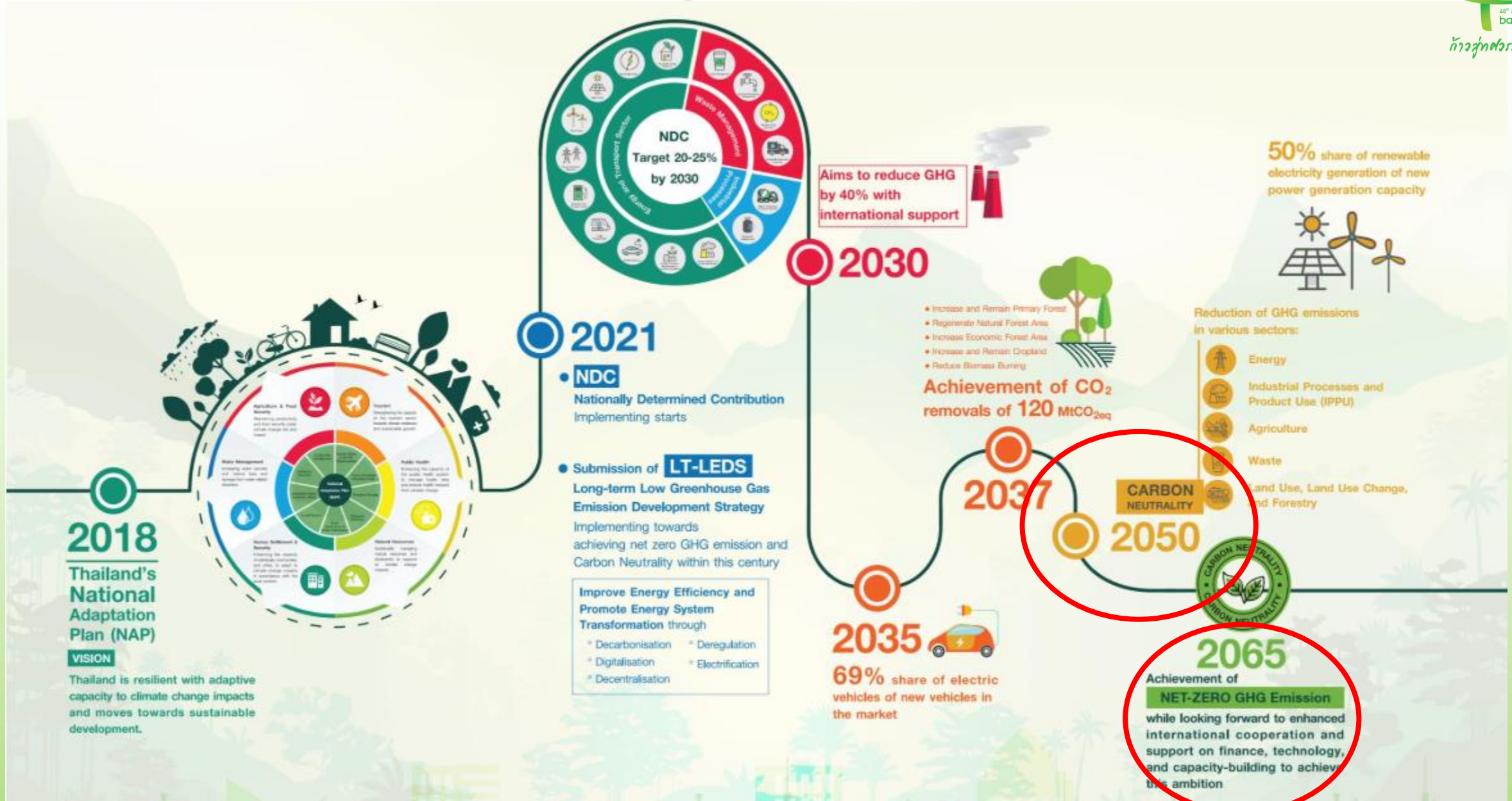


Global Climate Risk Index 2021: Thailand Ranking 9th

Highlighting its significant vulnerability among 180 countries, The country has incurred losses exceeding 7.7 billion dollars due to climate-related events.



Thailand's Net Zero Roadmap



2018

Thailand's National Adaptation Plan (NAP)

VISION

Thailand is resilient with adaptive capacity to climate change impacts and moves towards sustainable development.

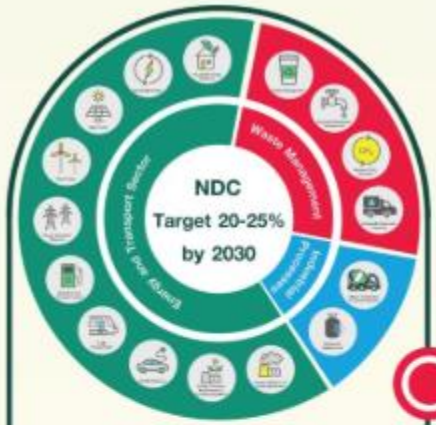


2021

- **NDC**
Nationally Determined Contribution
Implementing starts
- Submission of **LT-LEDs**
Long-term Low Greenhouse Gas
Emission Development Strategy
Implementing towards
achieving net zero GHG emission and
Carbon Neutrality within this century

Improve Energy Efficiency and Promote Energy System Transformation through

- Decarbonisation
- Deregulation
- Digitalisation
- Electrification
- Decentralisation



2030

Aims to reduce GHG by 40% with international support

2035

69% share of electric vehicles of new vehicles in the market

2037

Achievement of CO₂ removals of 120 MtCO_{2eq}

2050

CARBON NEUTRALITY

2065

Achievement of **NET-ZERO GHG Emission** while looking forward to enhanced international cooperation and support on finance, technology, and capacity-building to achieve this ambition.

- Reduction of GHG emissions in various sectors:
- Energy
 - Industrial Processes and Product Use (IPPU)
 - Agriculture
 - Waste
 - Land Use, Land Use Change, and Forestry




50% share of renewable electricity generation of new power generation capacity

Bangchak's Pathway to NET ZERO



Carbon Neutrality Target
2030

Net Zero GHG Emissions Target
2050

B	Breakthrough Performance	3
	Efficiency and Process Improvement = 30%	
C	Conserving Nature and Society	1
	Green and Blue Carbon = 10%	
P	Proactive Business Growth and Transition	6
	Green Portfolio and Future Technology = 60%	
NET	Net Zero Ecosystem	
	Ecosystem Creation	   Winnonie

Breaking Ground: Thailand's First SAF Producer from Used Cooking Oil



bsgf

1
ML/D

Secured SAF Feedstocks

85%

Used Cooking Oil (UCO)
To buy UCO at Bangchak Service Stations
ทอด
โพกิ้ง
"Fried to Fly"



Current Partners



Future Partners

15%

Palm Fatty Acid Distillate



Bbbgi

Biodiesel Plant
Palm Oil Refinery Plant

SAF CONSTRUCTION

Production Capacity
7 KBD or 1 ML/D

Investment budget:
~10 bn. THB



Construction Progress: 23%

Joined the Strategic Partnership with Sumitomo (Japan) (UCO-SAF Supply Chain)



Joined the Strategic Partnership for SAF with Cosmo Oil (Japan)



Acquired 45% stake in Thanachok Vegetable Oil (2012) Company Limited, The Biggest UCO Collector in Thailand



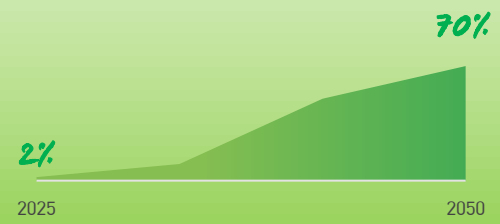
COMMISSIONING PLAN

Q1/25

EU Aviation sets the share of SAF mandate: under International Sustainability and Carbon Certification (ISCC EU Certificate)



Required Portion of SAF to Be Blended in Traditional Jet Fuel



ไอโนดซ่า



Thailand's first "not-for-profit" community supporting carbon credit trading and raising awareness on climate crisis



11

Founding Members

Established by Bangchak and
10 organizations

June 2021

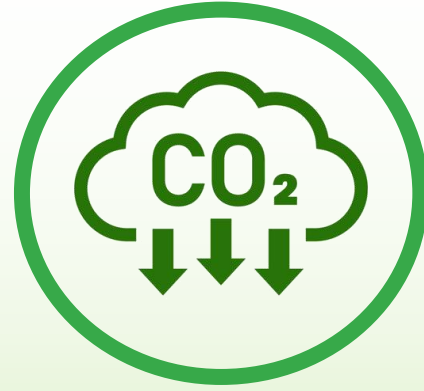


1,047

Members

207 Organizations
840 Individuals

June 2024



1.5

**Million tCO₂eq
carbon credit trading**

477,567 tCO₂eq TVERs
2,038,145 MWh RECs

= planting >165 million trees



3

Tools and Applications

- Marketplace and Carbon Credit Trading Platform
- Carbon Footprint Tracking for Organizations (CFO)
- "My CF" Carbon Footprint Calculator for Individuals (CFI)



7

Communications Activities

- Monthly Webinars
- Annual Forum
- Monthly Articles
- Online Communication Series
- Carbon Market Monthly Updates
- Speaking Events
- Exhibitions



Your Starting Point in Climate Action and Carbon Offsetting

www.carbonmarketsclub.com



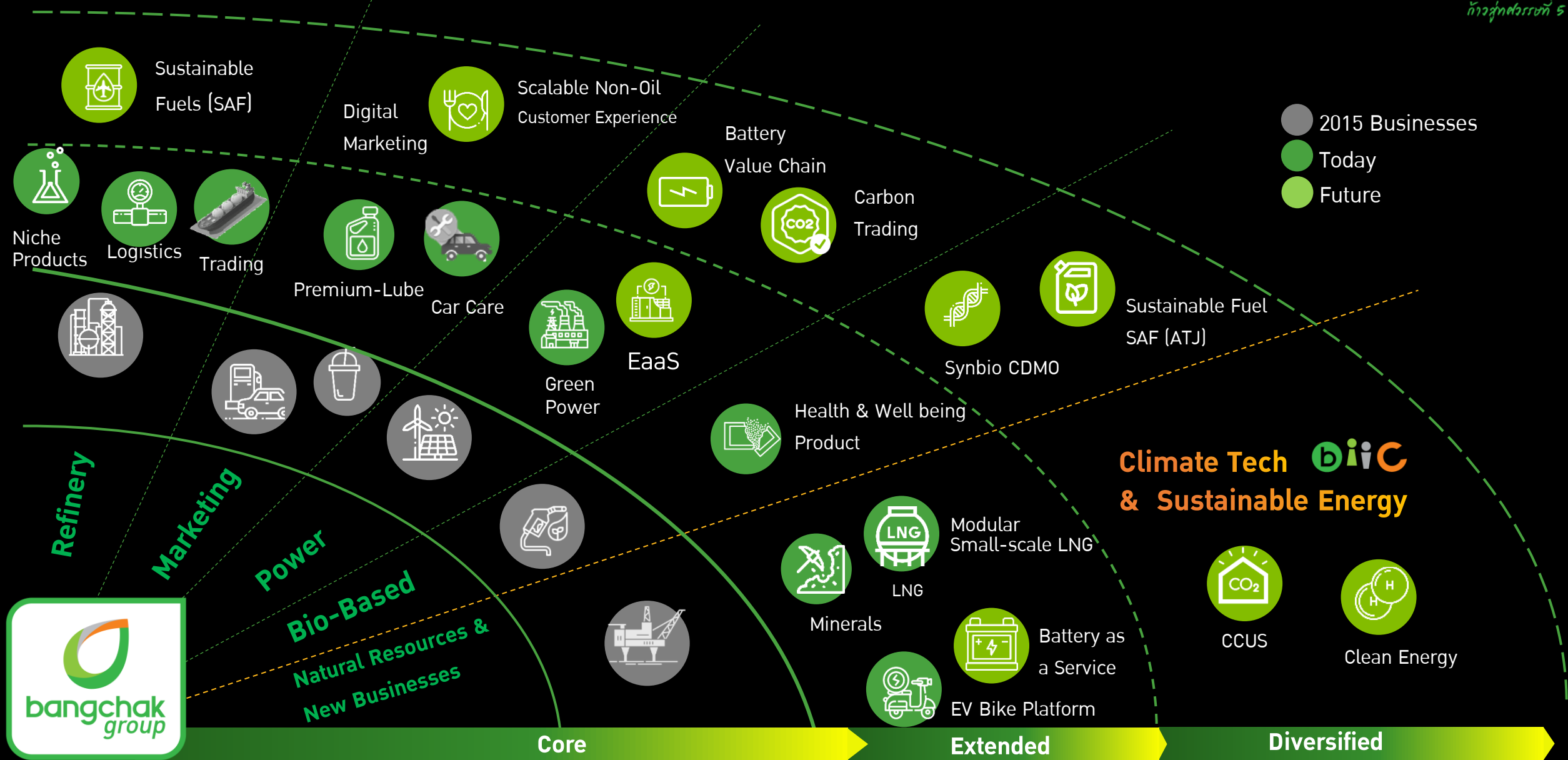


Crafting a Sustainable World
with **Evolving Greenovation**























 **bangchak**
group

Core Business Development and Expansion

Propelling Investment in Sustainable Ventures



Thailand's Fight Against Climate Crisis

ข้อกำหนดต่างประเทศ	 <ul style="list-style-type: none"> Carbon Border Adjustment Mechanism EU Taxonomy: Green Classification The Directive on Corporate Sustainability Reporting: CSRD  <p>United Nations Framework Convention on Climate Change</p>  <p>Conference of the Parties: CoP</p>	หน่วยงานในประเทศที่เกี่ยวข้อง     
นโยบาย	 <p>พระราชบัญญัติการเปลี่ยนแปลงสภาพภูมิอากาศ อยู่ระหว่างรวบรวมความคิดเห็น และนำเสนอต่อคณะรัฐมนตรีภายในกลางปี 2567</p>	 
มาตรการ	<p>มาตรการทางภาษี อยู่ระหว่างศึกษาและออกแบบ</p>  <p>มาตรการการลงทุน อยู่ระหว่างออกแบบเพิ่มสิทธิประโยชน์</p>  <p>มาตรการการเงิน ผลิตพันธบัตรการเงินที่สอดคล้องกับสภาพภูมิอากาศ เงื่อนไขการใช้เงิน</p> 	 
แนวปฏิบัติ	<p>แนวทางสำหรับโครงการและการจัดการสินทรัพย์เพื่อให้สอดคล้องกับสภาพภูมิอากาศ Thailand Taxonomy for Climate Finance Phase I: Energy . Transportation Sectors ✓ Phase II: Manufacture . Agriculture . Waste Management . Construction and Real Estate</p>	  
กลไก	<p>ตลาดคาร์บอน • Carbon Market • Carbon Credit</p> <p>ค่าธรรมเนียม • Cost of Verification • Number of Validation & Verification Body</p> <p>การสนับสนุนด้านเทคโนโลยี • Climate Tech • One Stop Service • SMEs Access</p> <p>การพัฒนาศักยภาพคน • High Tech Capability ✓ Thailand Plus Package (Upskill – Reskill)</p>	  

ร่าง พรบ. การเปลี่ยนแปลงสภาพภูมิอากาศ พ.ศ.

อยู่ระหว่างการรับฟังความคิดเห็น Public Hearing จะเสนอกรม. ภายในปี 2567



หมวด 1 ทั่วไป



หมวด 2 เป้าหมาย
ด้านการเปลี่ยนแปลงสภาพภูมิอากาศ



หมวด 3 คณะกรรมการ
นโยบายด้านการเปลี่ยนแปลง
สภาพภูมิอากาศ (กนภ.)



หมวด 4 กองทุนการเปลี่ยนแปลง
สภาพภูมิอากาศ



หมวด 5 แผนแม่บทรองรับการเปลี่ยนแปลงสภาพ
ภูมิอากาศ



หมวด 6 ข้อมูล
ก๊าซเรือนกระจก



หมวด 7 การลดก๊าซเรือนกระจก



หมวด 8 ระบบซื้อขายสิทธิในการปล่อยก๊าซเรือนกระจก



หมวด 9 ระบบภาษีคาร์บอน



หมวด 10 คาร์บอนเครดิต



หมวด 11 การปรับตัวต่อการเปลี่ยนแปลงสภาพภูมิอากาศ



หมวด 12 มาตรการส่งเสริมการดำเนินงาน



หมวด 13 มาตรฐานการจัดกลุ่มกิจกรรม



หมวด 14 บทกำหนดโทษ



บทเฉพาะกาล

Breakthrough Performance

Energy Efficiency and Low Carbon Process In Our Business Operations

B Breakthrough Performance:

Refinery



Energy efficiency program and process optimization with low carbon process


Marketing



Clean energy by solar rooftop and solar air conditioner at Service station and Intanin

Bio-Based



 **Recovery Biogas by BBGI Utility and Power (BUP)**

Power



 **Energy Efficiency program in our sites**

Head Office



Certified LEED: Green building system



Conserving Nature and Society

Nature-based Sequestration by Green and Blue Carbon

Community Forests



Blue Carbon Research

“Plant D” Project



Mangrove Alliance

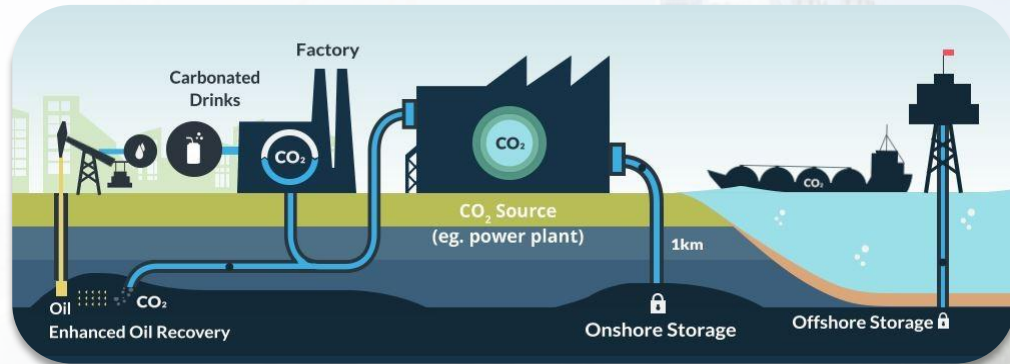
Proactive Business Growth and Transition

Transitioning business towards sustainable growth with Future Technology



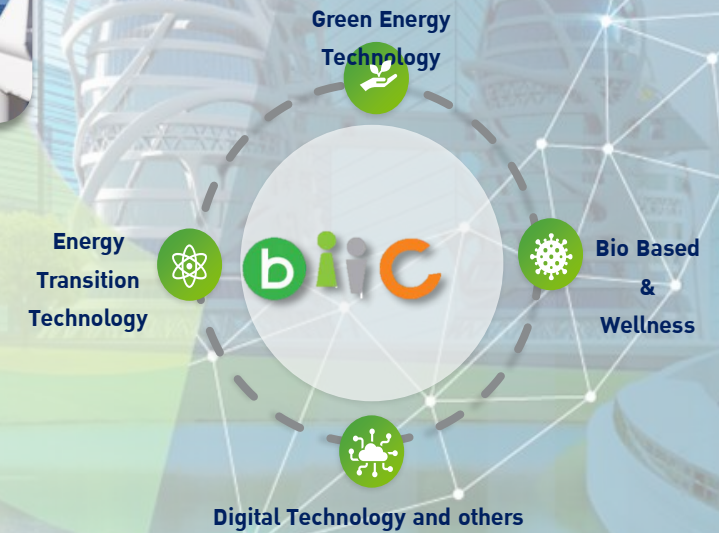
P Proactive Business Growth and Transition: CCUS and New Business Study

Partnership study on Carbon Capture Utilization and Storage (CCUS), AI, etc.



BiiC & New Business

Future technologies: CCUS, Hydrogen, Carbon Credit Value Chain



16 June 2023

“Carbon Capture Technology”

MoU: BCP & AIT & C-Quester



Creating an Ecosystem Accommodating Net Zero Target

NET Net Zero Ecosystem



CO₂
23,000 tCO₂e/Y
(Throughput 4,615 ML/Y)



CO₂
2,000 tCO₂e/Y
(1,010 USER, Acc. 48 million km)



CO₂
80,000 tCO₂e/Y
(Compare with Conventional JET)



CO₂
1,643,563 tCO₂e.
(TVER + RECs as of Q1, 2024)