

Thailand's **BCG** Strategy and the National Determined Contributions

18 February 2022



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President of Thailand Environment Institute (TEI)

Chairman of Circular Economy Sub-committee under BCG Model

Chairman Board of Directors, Thailand Greenhouse Gases Organization

Former Permanent Secretary of Ministry of Natural Resources and Environment



THINK TANKS

นับเป็นเกียรติประวัติที่สถาบันสิ่งแวดล้อมไทยได้รับการจัดเป็น
หนึ่งในหน่วยงานคลังสมอง (Think Tanks)
ด้านสิ่งแวดล้อมที่ดีที่สุด ติดต่อกันเป็นปีที่ 9
โดยมหาวิทยาลัยเพนซิลวาเนีย ประเทศสหรัฐอเมริกา

It's a great honor that TEI has been ranking
in the Top Think Tanks on Environmental Sustainability,
for the 9th consecutive year, by University of Pennsylvania.

รู้จัก สำนักดี ภาควางใจ ไร่ใช้สังคม

รู้จัก สำนักดี ภาควางใจ ไร่ใช้สังคม



NATURAL RESOURCES



CLIMATE CHANGE



LIVABLE CITY



SUSTAINABLE CONSUMPTION
AND PRODUCTION



ENVIRONMENTAL EDUCATION



SUSTAINABLE INDUSTRY



POLICY AND PLANNING



EMERGING ISSUE

Outlines



**Global Environmental Change
& Sustainable Development**



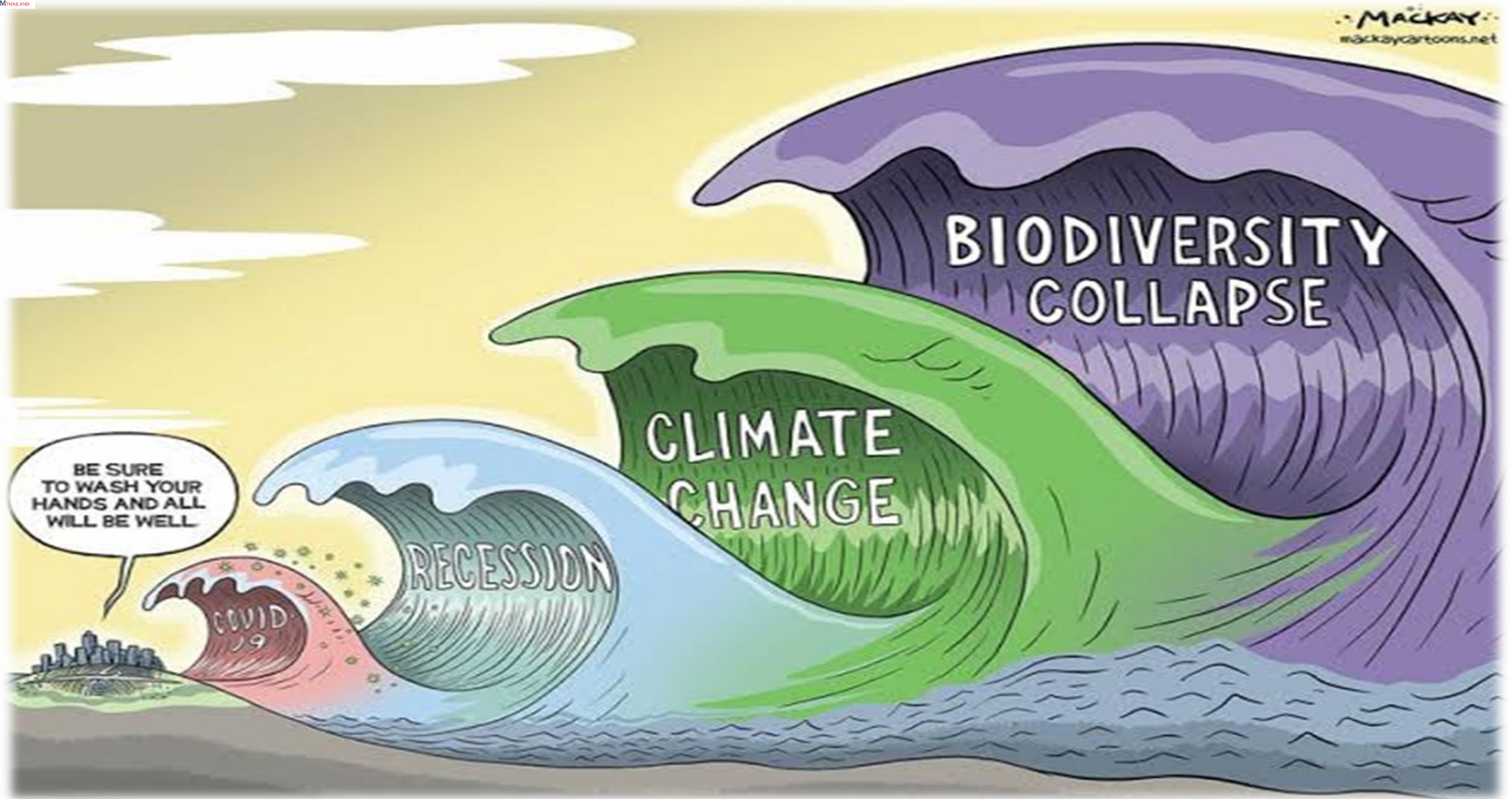
**Thailand's BCG Strategy
>>BCG Economy Model<<**



Thailand Climate Action

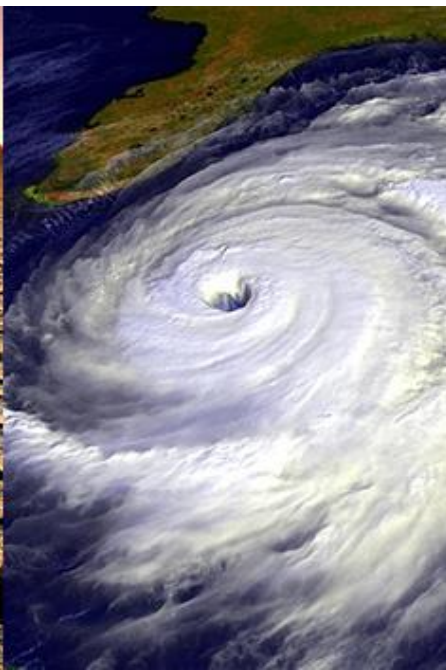
Global Environmental Change & Sustainable Development







Environmental Crisis





SUSTAINABLE DEVELOPMENT REPORT 2021 & SDG Index

อันดับของประเทศไทย 43 จาก 165 ประเทศ

SDG Updates

TOP 5 และอันดับของประเทศไทยสมาชิกอาเซียน

Rank	Country	Score
1	Finland	85.9
2	Sweden	85.6
3	Denmark	84.9
4	Germany	82.5
5	Belgium	82.2
43	Thailand	74.2
51	Vietnam	72.8
65	Malaysia	70.9
76	Singapore	69.9
84	Brunei Darussalam	68.3
97	Indonesia	66.3
101	Myanmar	64.9
102	Cambodia	64.5
103	Philippines	64.5
110	Lao PDR	63.0

ลำดับในกลุ่มประเทศสมาชิกอาเซียน

1 2 3 4 5 6 7 8 9 10

สรุปข้อมูลและแปลเป็นภาษาไทยโดย SDSN Thailand

OVERALL PERFORMANCE

COUNTRY RANKING

Thailand
43 / 165



COUNTRY SCORE



REGIONAL AVERAGE: 65.7

STATISTICAL PERFORMANCE INDEX

0 (WORST) TO 100 (BEST)



AVERAGE PERFORMANCE BY SDG



SDG DASHBOARDS AND TRENDS



Notes: The full title of Goal 2 "Zero Hunger" is "End hunger, achieve food security and improved nutrition and promote sustainable agriculture".
The full title of each SDG is available here: <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>

BCG MODEL: Economic Model for Sustainable Development





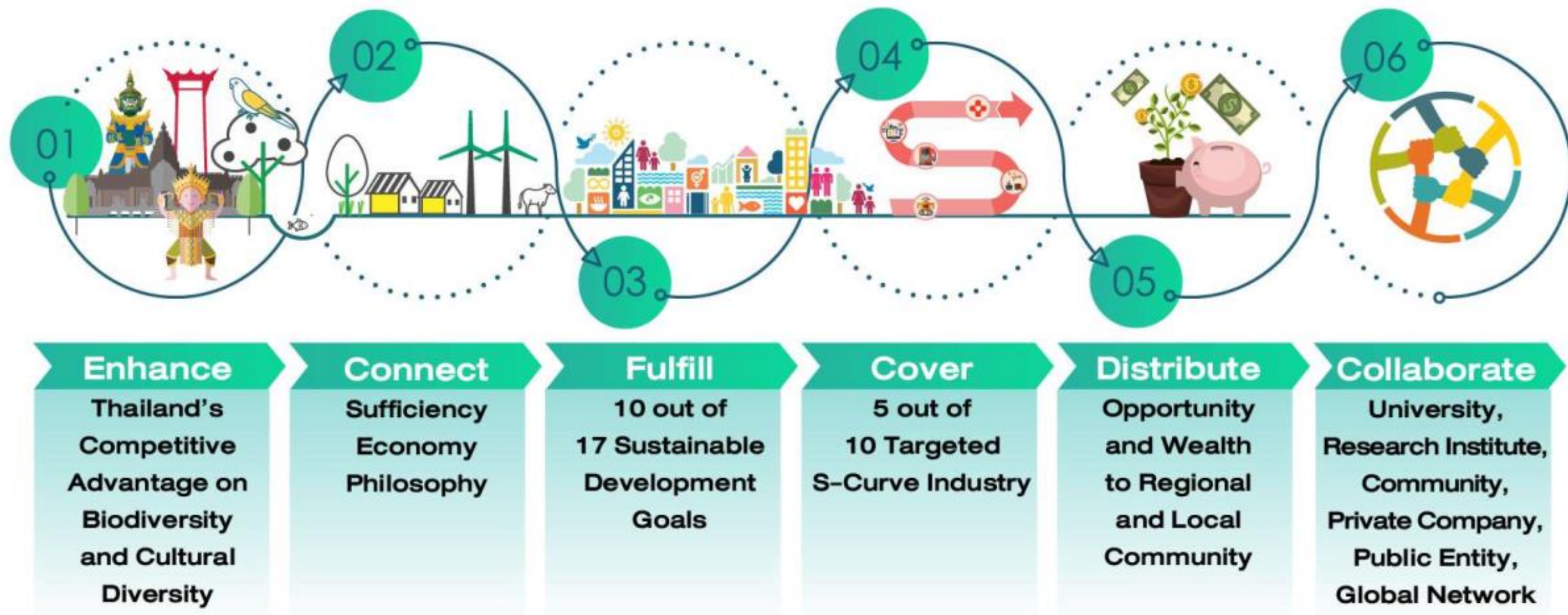
Thailand's BCG Economy Model

Thai government strongly promotes country development by giving a high priority to a new economic model known as BCG Model to develop three areas of economy: bio-economy, circular economy, and green economy.

BCG Economy: Thailand's Economic Model Post-COVID-19



BCG MODEL: 6 Dimensions



Target sectors



**Biodiversity
and
Cultural diversity**



**Food and
Agriculture**



**Medical and
Wellness**



**Energy,
Material
and Biochemical**



**Tourism and
Creative
Economy**



**Circular
Economy**

Challenges

Food and Agriculture



12 Million People
Working in
Agricultural Sector

90% of Agricultural
Land Usage
Limited to only 6 Majors Crops:
Rice, Sugarcane, Cassava,
Rubber, Oil Palm and Corn

Challenges

- Volatile crop price and low income farmer
- Deteriorating natural resources
- Aged agro-workforce

Medical and Wellness



100 Billion Baht
Imported Value of Medical
and Pharmaceutical Products

1.4 Trillion Baht
Estimated Healthcare
Expenditure when Thailand
Becomes Super-aged Society

Challenges

- Aging Society
- Dependent on the import of medical equipment and pharmaceutical products.

Energy, Material and Biochemical



60% of Energy
Consumption
Are Imported

Only 15.5%
of Domestic
Energy Production
Come from Renewable Energy

Challenges

- Energy security of the country
- Reduction of the import of energy

Tourism and Creative Economy



3 Trillion Baht
Income from Tourism
(Rank 4th in the World)

80% of Tourists
Or 35 Million People
Travel to Only 8 Provinces

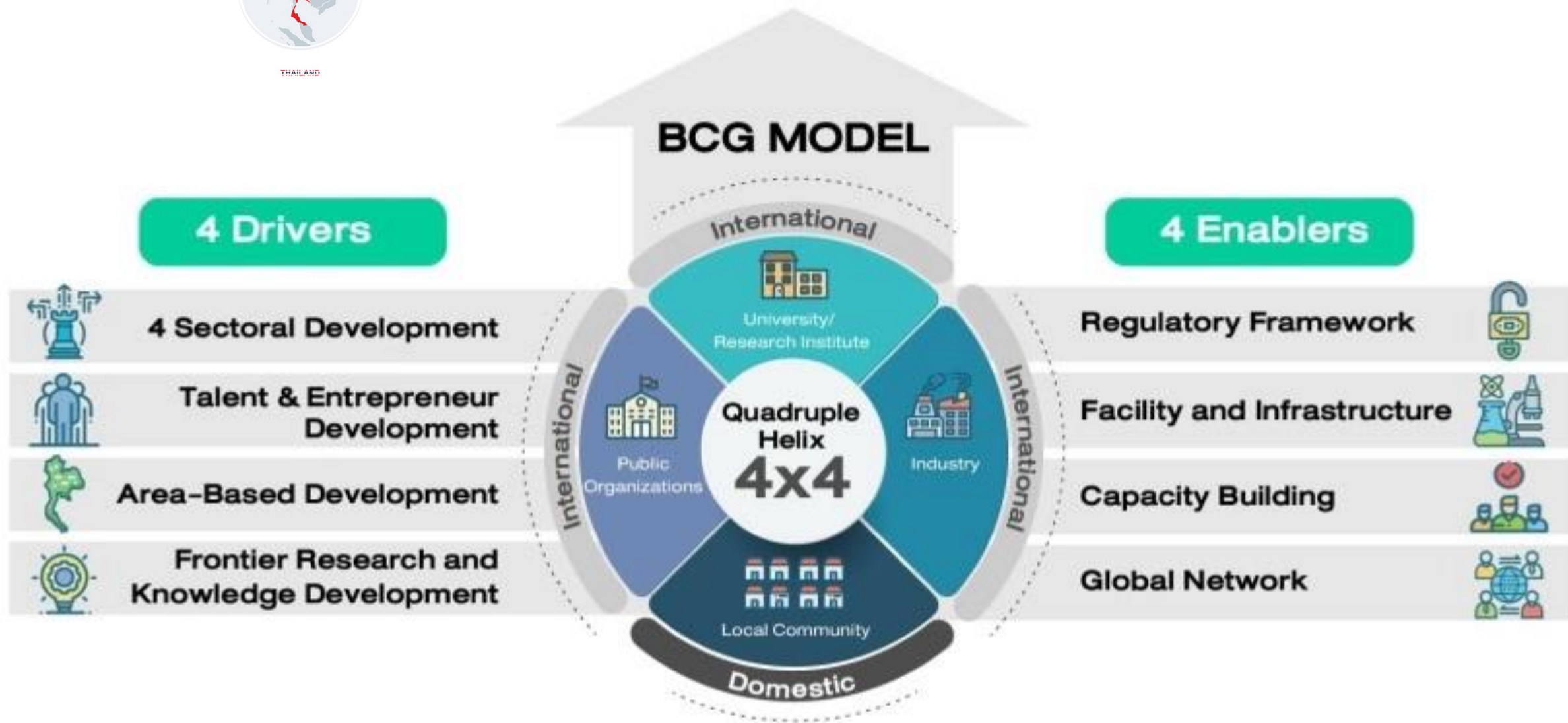
Challenges

- “Overtourism” – number of tourists over the carrying capacity of the location
- Deteriorating natural resources

Source : National Science and Technology Development Agency



Thailand's Vision and National Policy



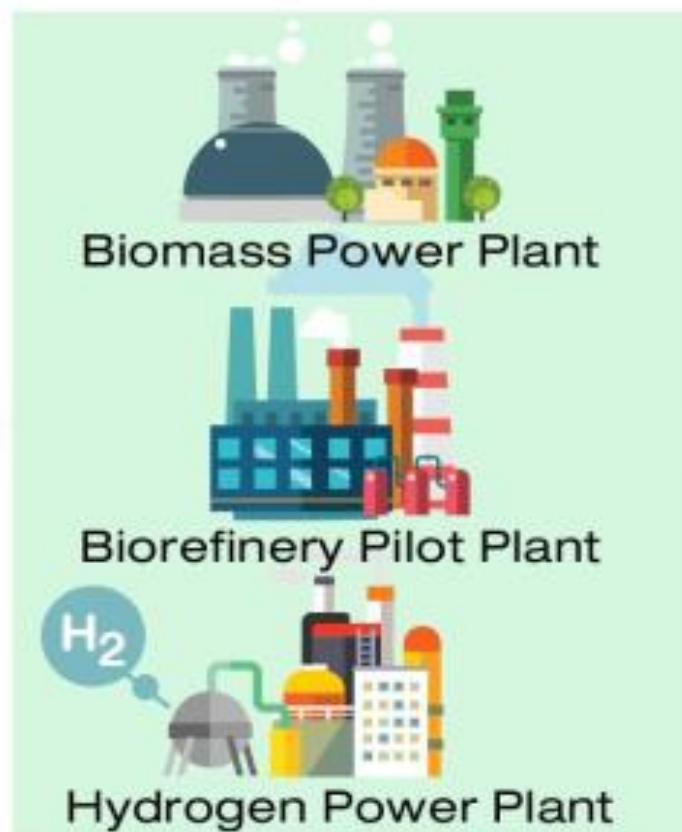
Source : National Science and Technology Development Agency

BCG MODEL in Energy, Material and Biochemical Sector

Agricultural Product and Waste



Investment Promotion



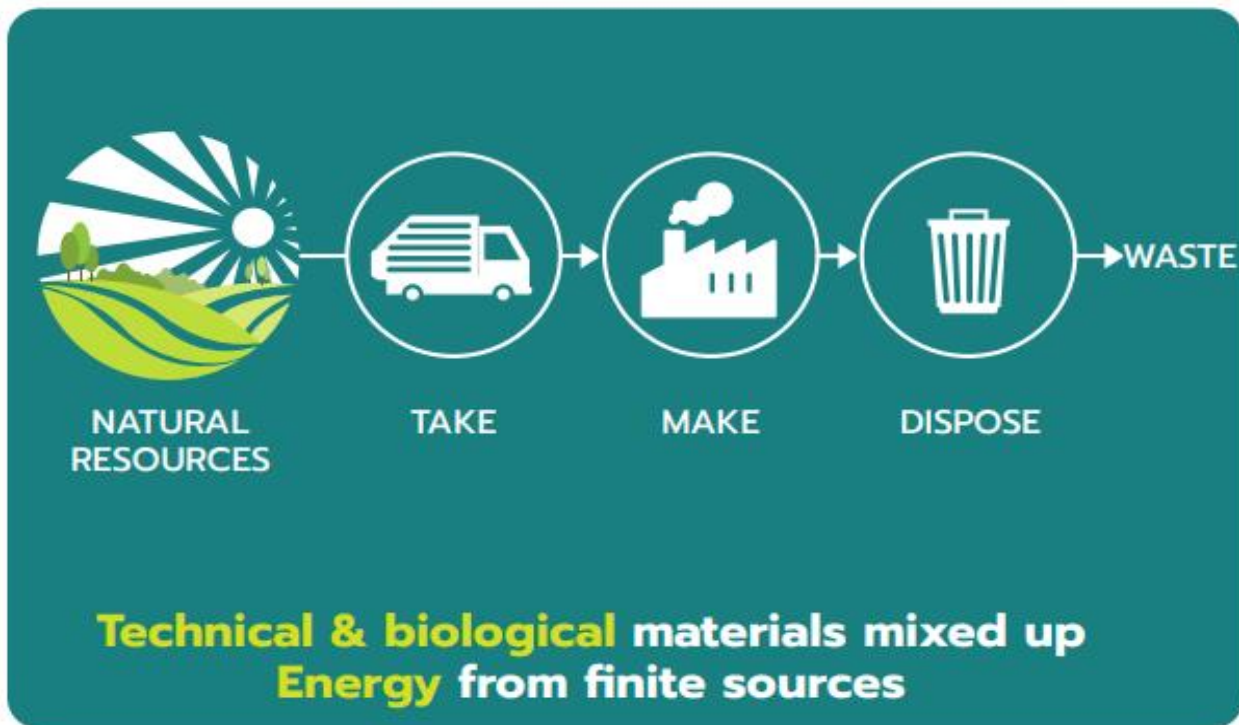
Industrial Development



Source : <https://www.nstda.or.th/thaibioeconomy/bcg-concept/bcg-in-action/bcg-drivers/material-energy.html>

A transition from unsustainable linear economy to a more sustainable circular economy

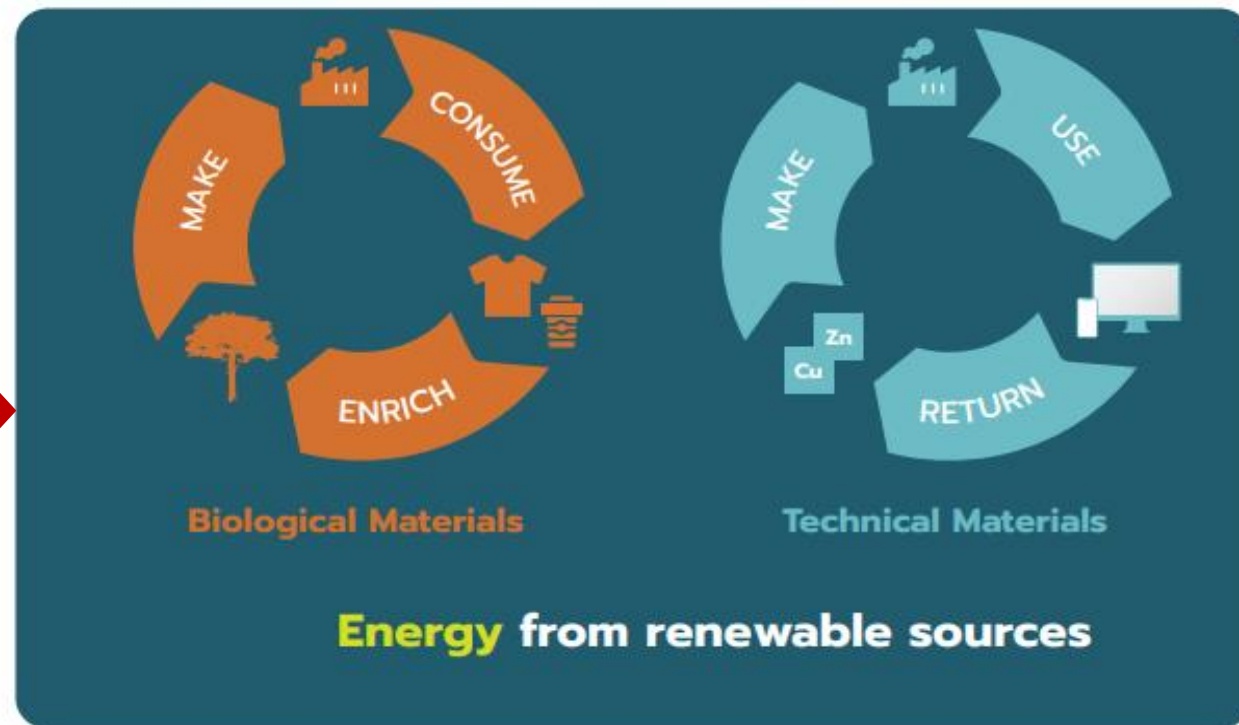
Linear Economy



Linear Economy; Take-Make-Dispose

We take resources from the ground to make products, which we use, and, when we no longer want them, throw them away

Circular Economy



Circular Economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems

Why we need a circular economy?



Resource Scarcity

Leading to economic and social risk of supply shortage



Over Consumption

Business rely on increasing resource consumption to create growth



Severity of Pollution

Linear economy means increased consumption... Leading to more waste and pollution



Effect of Global warming & Climate Change

Paris Agreement target of limiting global warming to as close as possible to 1.5 -2°C



Actions to achieve a Better and More Sustainable Future for All

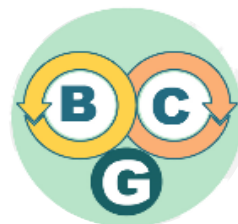


Maximize Resource Efficiency and Eliminate Waste



New Economic Opportunities

- Boost GDP
- Growing green business/startups
- Job creation/Green job



Alignment with Government Policy

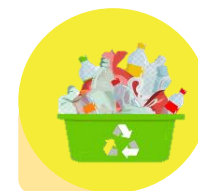
- Bio-Circular-Green(BCG) economic model and Thai Plastic Roadmap

BCG in Circular Economy

Driving Mechanism

: Delivering through key project/Focus sector
Co-benefits to create success model

Target Sectors



Plastic Waste

- : Waste reduction
- : Improving Segregation & collection system
- : Encourage recycling



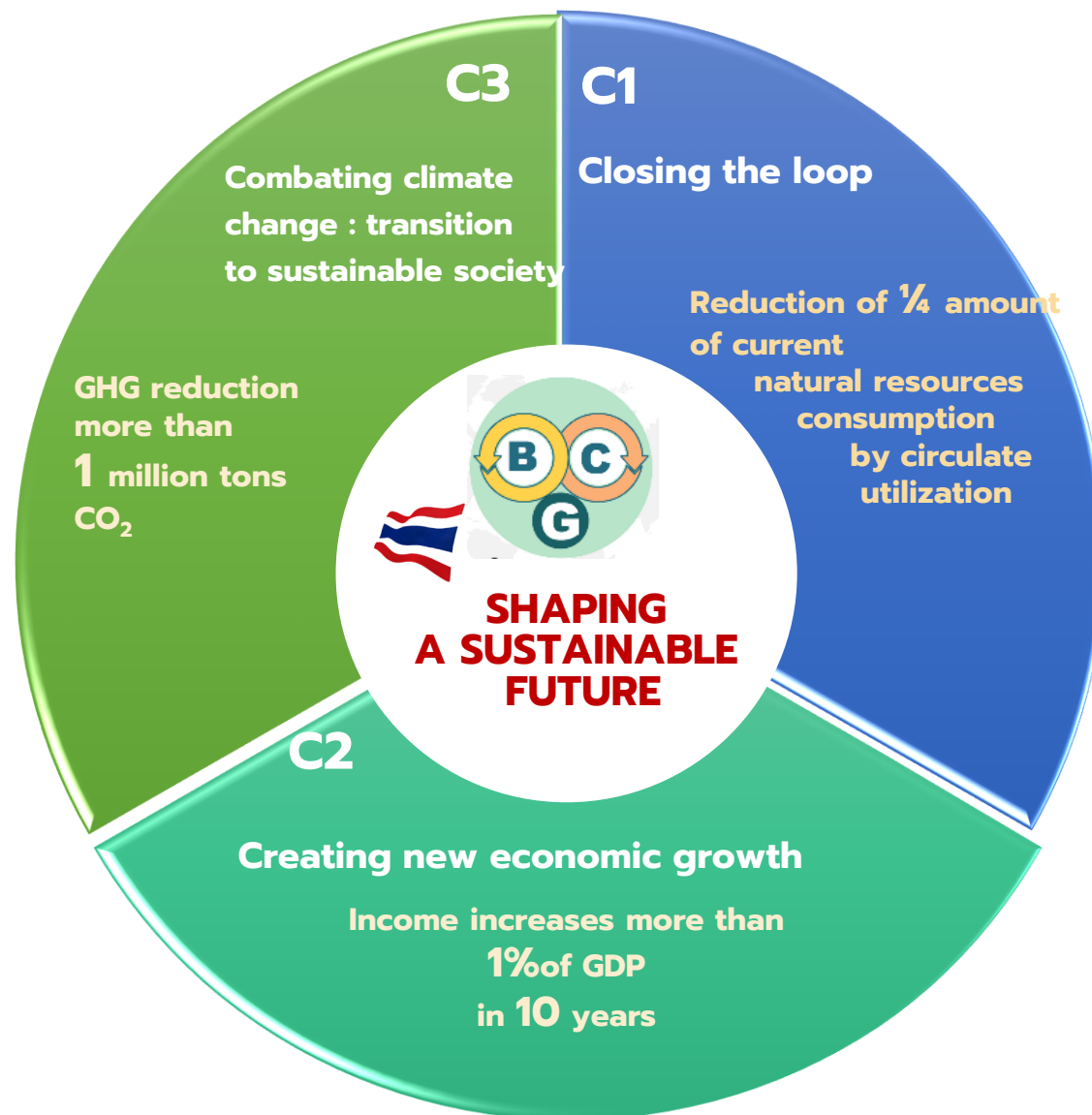
Agriculture & Food Industry

- : Increasing resource use efficiency;
- Agricultural waste - Stop open burning
- : Food loss/food waste reduction
- : Increasing consumer awareness



Construction Sector

- : Strengthening innovation & technology capability
- : Promoting environmental friendly construction to support smart city policy



- In 2018, Thailand's domestic production of plastics accounted for over 6.07 million tons.
- Approximately 1.93 million tons of plastics litter annually. There are approximately 25 % recycle and 75 % to land fill, incineration and leaking to the environment.



THAILAND' Roadmap to reduce plastic marine debris by at least **50%** by **2027**

Target 1 Reduce and replace some single use plastic by using environmentally friendly products



Target 2 Recycle target plastic waste by applying circular economy principle



Source: PCD, 2019

Closed-loop System for Plastic



- **C**ollecting
- **S**orting
- **C**irculation
- **U**talization

Milestones

Plastic bag/Plastic packaging PET, PE, PP are segregated and circulated to recycling system 100% by 2030

Impact

- 100% recycle PET could reduce energy consumption 680 million ton of oil equivalent/year, with a value about 0.6 billion US\$/year
- Reduced resources (e.g. water, energy) consumption
- Reduced GHG emission \cong 1.0 million tons
- Reduced pollution and solving marine plastic debris problem
- Job creation and generating income to community

PPP Plastics

Public Private Partnership for Sustainable Plastic and Waste Management



TBCSD



PPP Plastics



Press Conference organized and MOU signed: June 5, 2018

39 Organizations of PPP Plastics Partners



Civil Society Organization



Government Organization



Educational Institution



มหาวิทยาลัยกรุงเทพ
BANGKOK UNIVERSITY

Private Sector

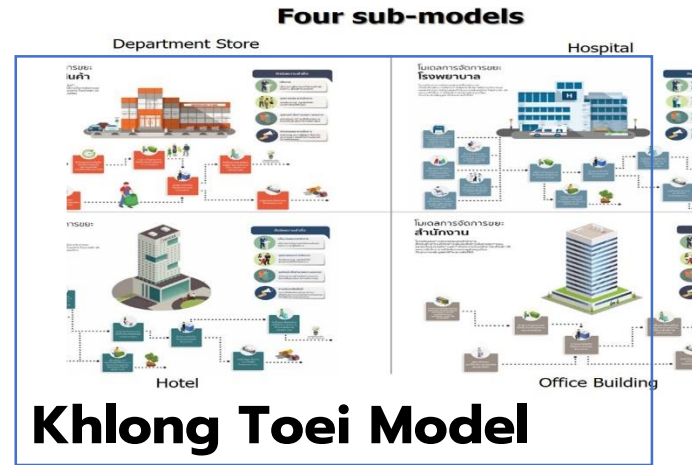


International Organization





PPP Plastics Circular Economy Model



Big City Waste Management with Circular Economy

Created waste management models focusing on increasing recycle rate by improving waste separation facilities and process.



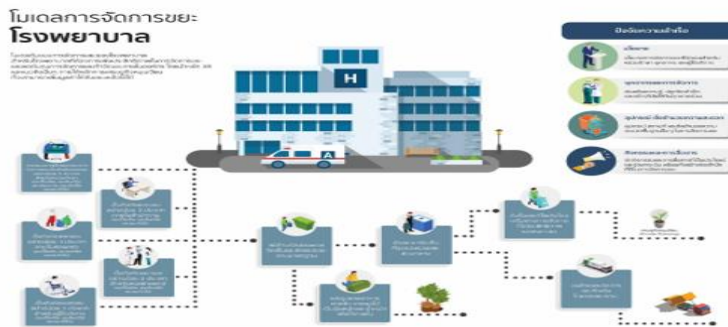
- General waste of the **7** participating buildings **decrease 21 %**.
- Recycle rate **increase** more than **56 %** or **358 kilograms/month**.

Four sub-models

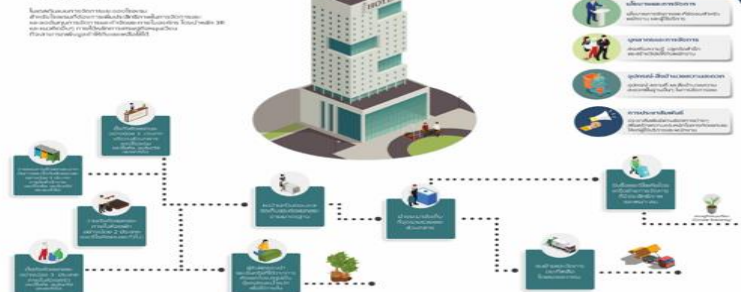
Department Store



Hospital

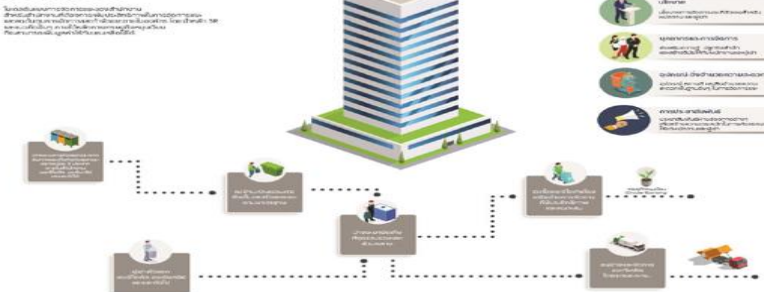


โรงแรม



Hotel

สำนักงาน

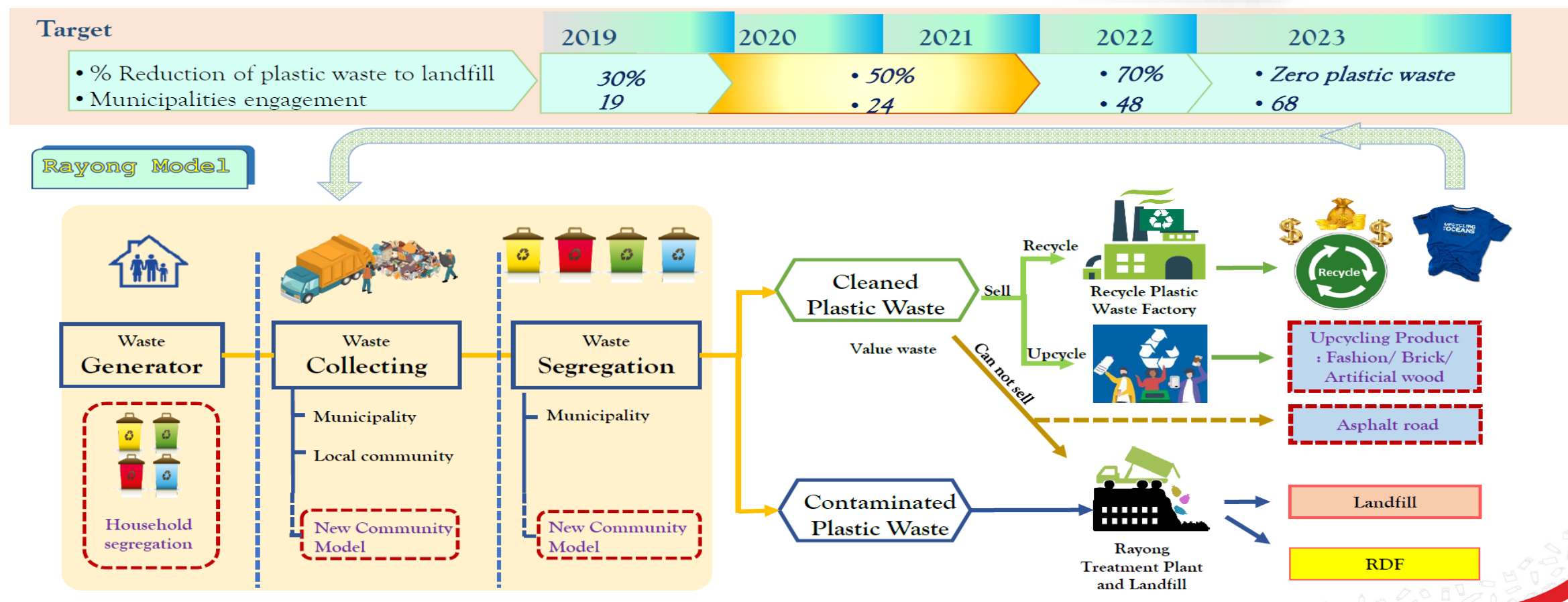


Office Building



Rayong Model

- Created a plastic waste management model
- People learn the value of plastics and how to sort them
- The model can be replicated to other communities
- 300 tons of plastic waste were recycled



Drop Point Project



PPP Plastics

“Magic Hand x Won”



- Creating a plastic waste collection system
- Closed Loop Film Packaging Management
- Target plastic bag and film packaging
- Target used-plastic is value 5 baht/kg for donation to marine life conservation program



>350

Place Used-Plastic Box

>40

Drop Point Contributor

7

Recycler & Picker

19,159

Kg. of Cumulative used-plastic bag and film packaging

16,649

Kg. of CO₂ emission reduction

9.68

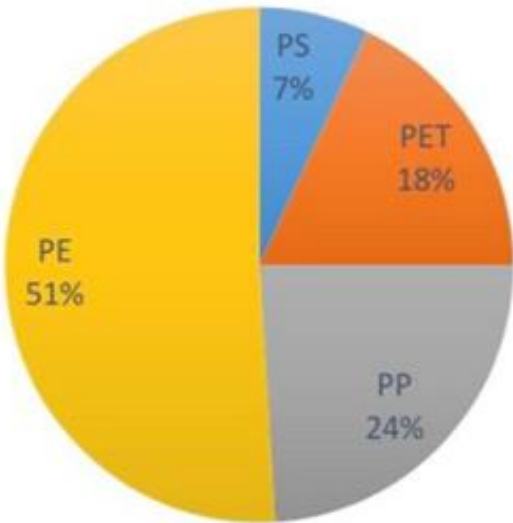
Rai of Teak



Technologies & Innovation



Material Flow Analysis 2018



■ PS ■ PET ■ PP ■ PE



SCG & Dow collaborate with Chiangmai University study assessment of the presence of Microplastics from Recycled Plastic Road. Follow the mixed plastic waste from Thailand Material Flow Analysis, the ratio is PE:PP:PET:PS is 51:24:18:7 and blend mixed plastic waste instead of Asphalt Cement 0%, 8%, 10% and 12%.

Accelerated Polishing Machine



100,000 rounds



Industrial Estate Model



Real Estate Model

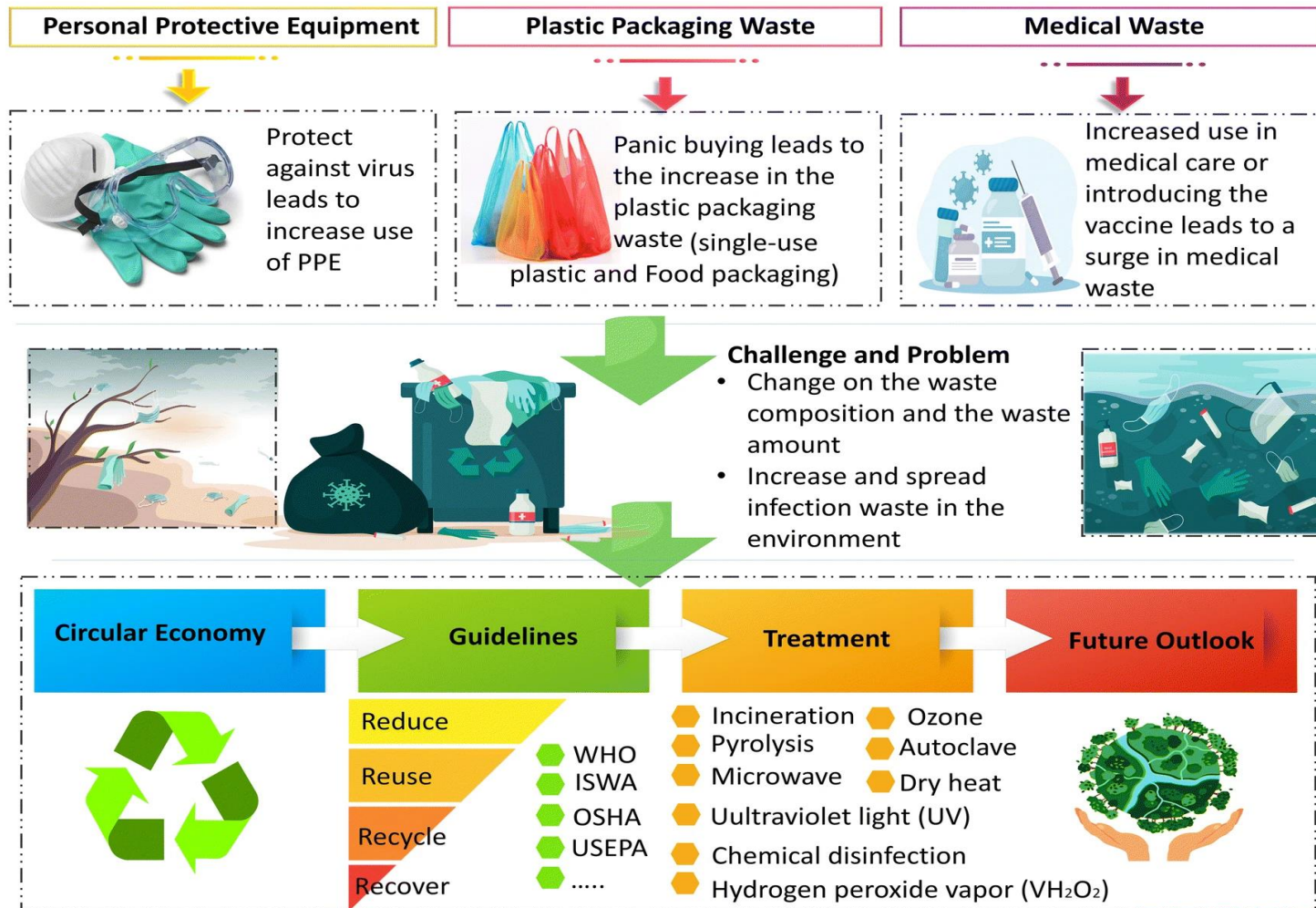


Community Model





Impact of COVID-19 on Waste Generation



The Graphical Framework of Challenges, Strategies, and Recommendations during the Pandemic

Drivers Mechanism of BCG-Circular Economy

Driving by Key project/ Focus sector

- : create success model
- : accelerating the scale-up of circular economy

CE Solution Platforms

- : develop CE platforms and link to users (e.g. CE design platform)
- : strengthening innovation & technology capability

Public-Private Partnerships

- : bringing together leaders from the private, public and not-for-profit sectors



Build CE Society and Citizens

- : education and communication to change social behavior of consumers e.g. CE curriculum in general education
- : enhancing skills of manufactures/businesses

Create CE Market

- : regulatory reforms
- : unlock policy & regulatory barriers for CE market
- : introduce tax incentives/ financial support
- : create measures to stimulate demand e.g. green public procurement (GPP)



Thailand Climate Action





News update

เปิดรายงานสะท้อนโลก!

World Temperature will increase more than 2.7 C



IPCC, 2021: Summary for Policymakers
Climate Change 2021: The Physical Science Basis

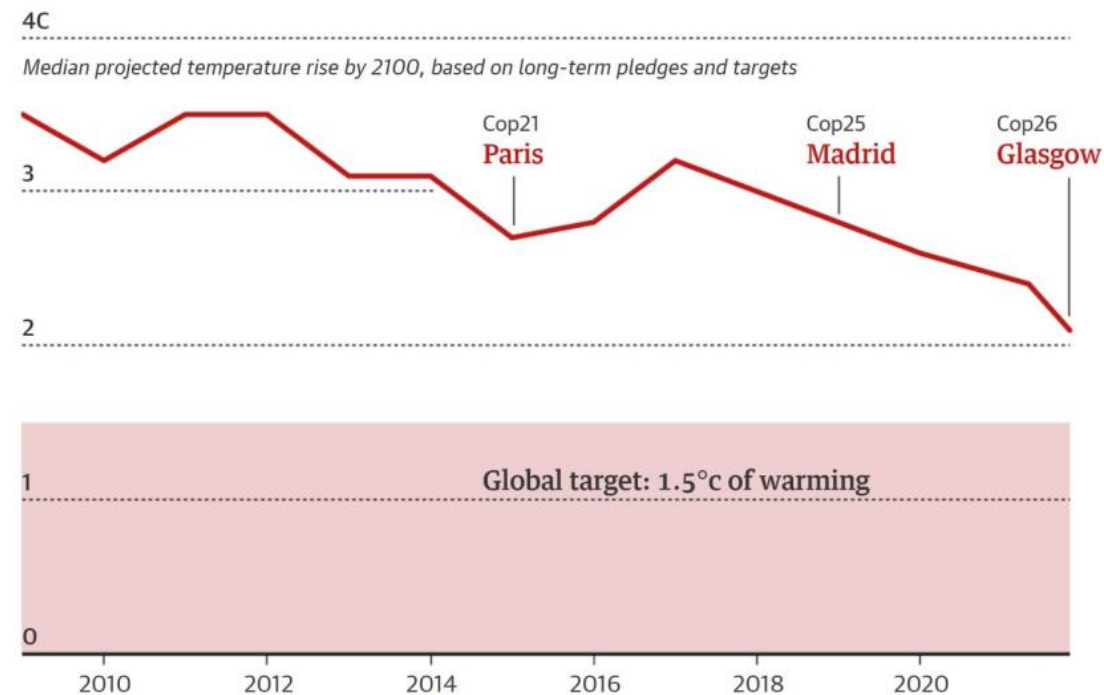
iGreen

IPCC Climate Change Report 2021



Guardian graphic. Source: Climate Action Tracker, Warming Projections Global Update - November 2021

Recent Cop pledges have brought projected global warming down from 2.7C in 2015 to 2.1C today



Guardian graphic. Source: Climate Action Tracker. Median projections used, based on the latest long-term pledges and targets

2°C

Limit global warming to 2 degrees celcius above pre-industrial levels

Global GDP Loss **13%**

Sea levels will rise **50cm** by 2100

17% less freshwater

Heatwaves last up to **1.5** months longer

98% reefs at risk from coral bleaching

VS



1.5°C

Limit global warming to 1.5 degrees celcius above pre-industrial levelsa

Global GDP loss **8%**

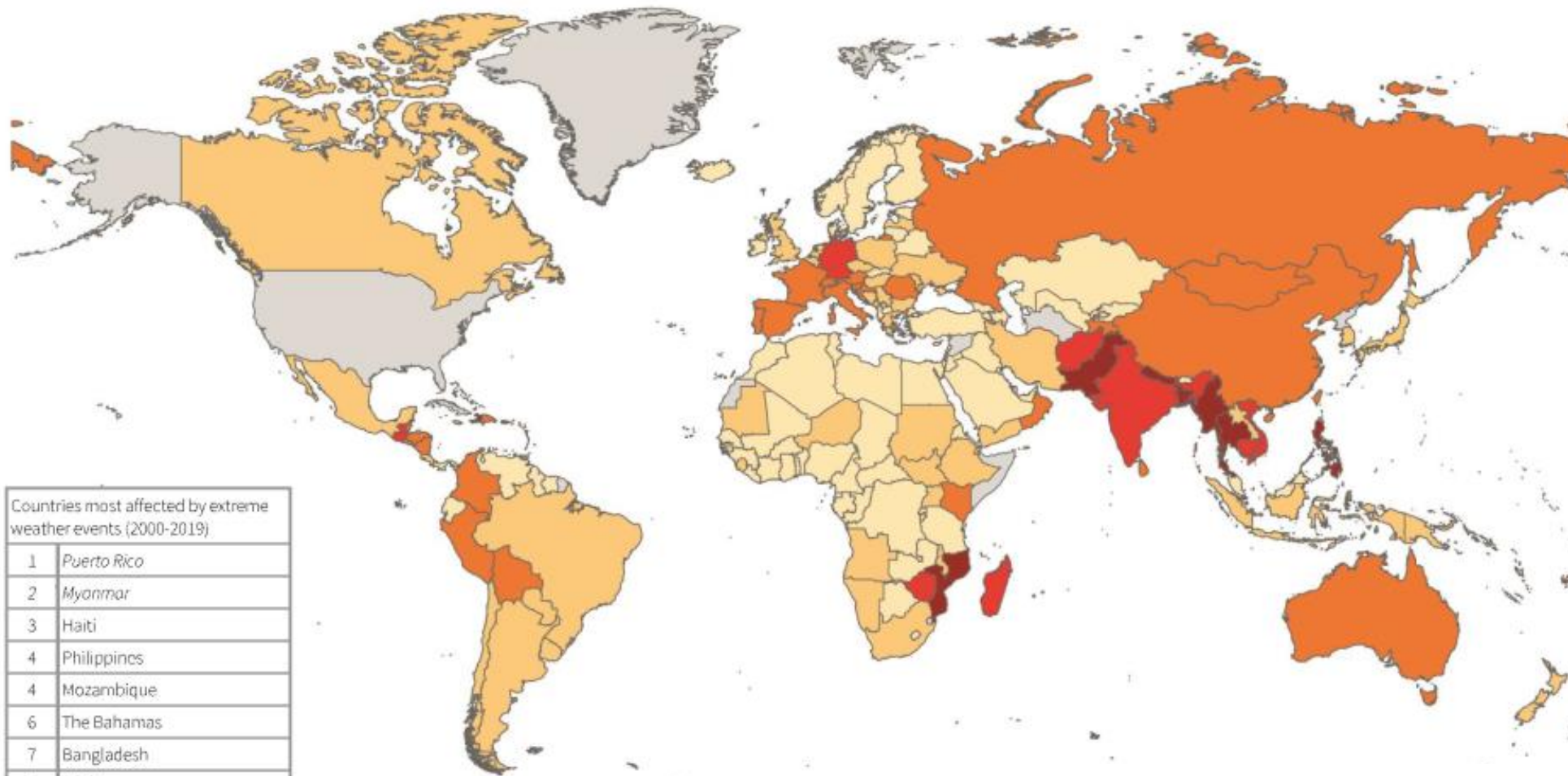
Sea levels will rise **40cm** by 2100

9% less freshwater

Heatwaves last up to **1.1** months longer

90% reefs at risk from coral bleaching

CLIMATE CHANGE



© 2021 Germanwatch

Countries most affected by extreme weather events (2000-2019)	
1	<i>Puerto Rico</i>
2	<i>Myanmar</i>
3	Haiti
4	Philippines
4	Mozambique
6	The Bahamas
7	Bangladesh
8	Pakistan
9	Thailand
10	Nepal



Italics: Countries where more than 90% of the losses or deaths occurred in one year or event

BRIEFING PAPER

GLOBAL CLIMATE RISK INDEX 2021

Who Suffers Most from Extreme Weather Events?
Weather-Related Loss Events in 2019 and 2000-2019

David Eckstein, Vera Künzel, Laura Schäfer

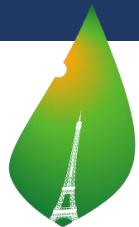
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Climate Risk Index: Ranking 2000 - 2019

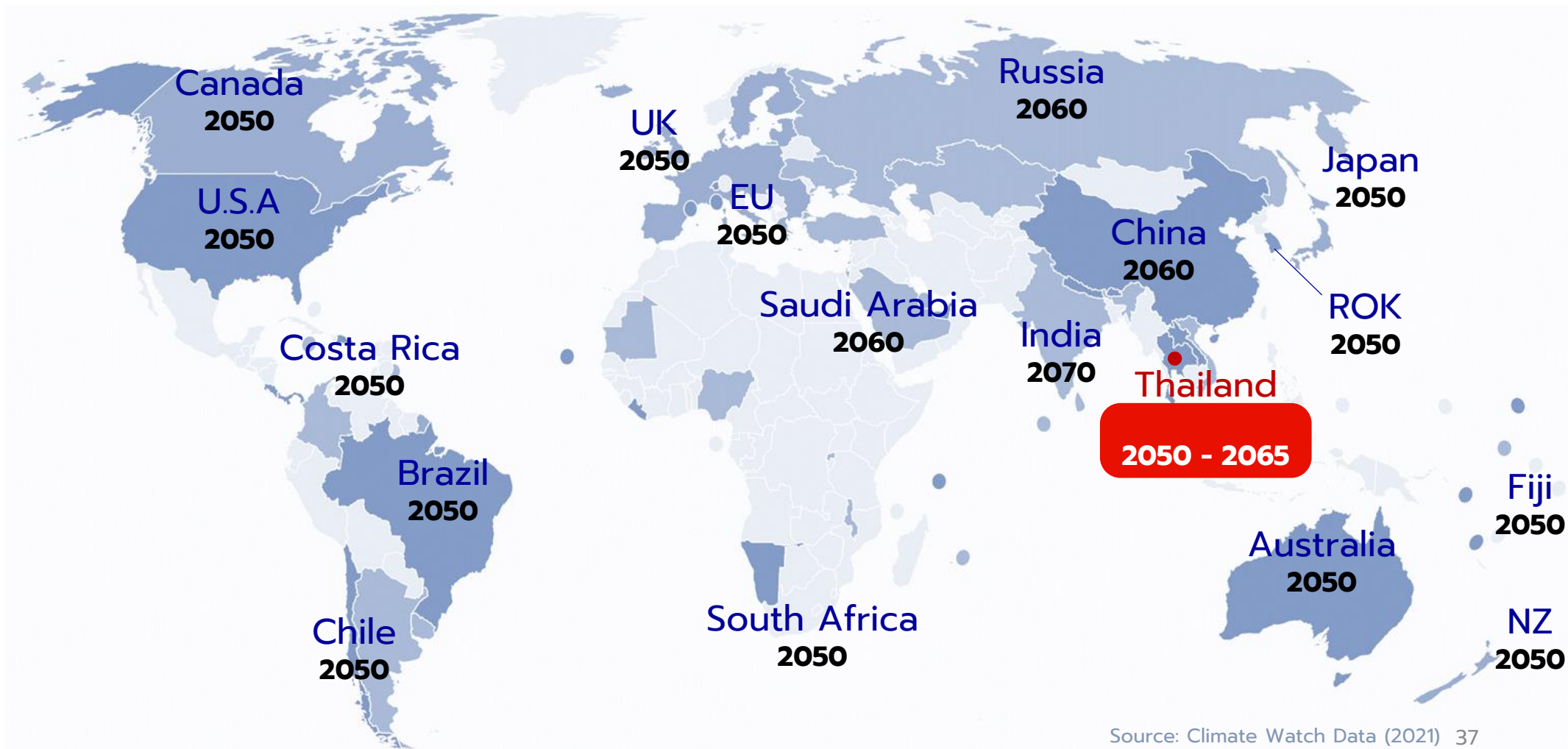


COP26: Global Goal towards Net Zero Emissions



Paris Agreement

To achieve **a balance** between anthropogenic emissions by sources and removals by sinks of greenhouse gases **in the second half of this century**



Source: Climate Watch Data (2021) 37



31 OCT - 12 NOV 2021
GLASGOW

COP26

IN PARTNERSHIP WITH ITALY

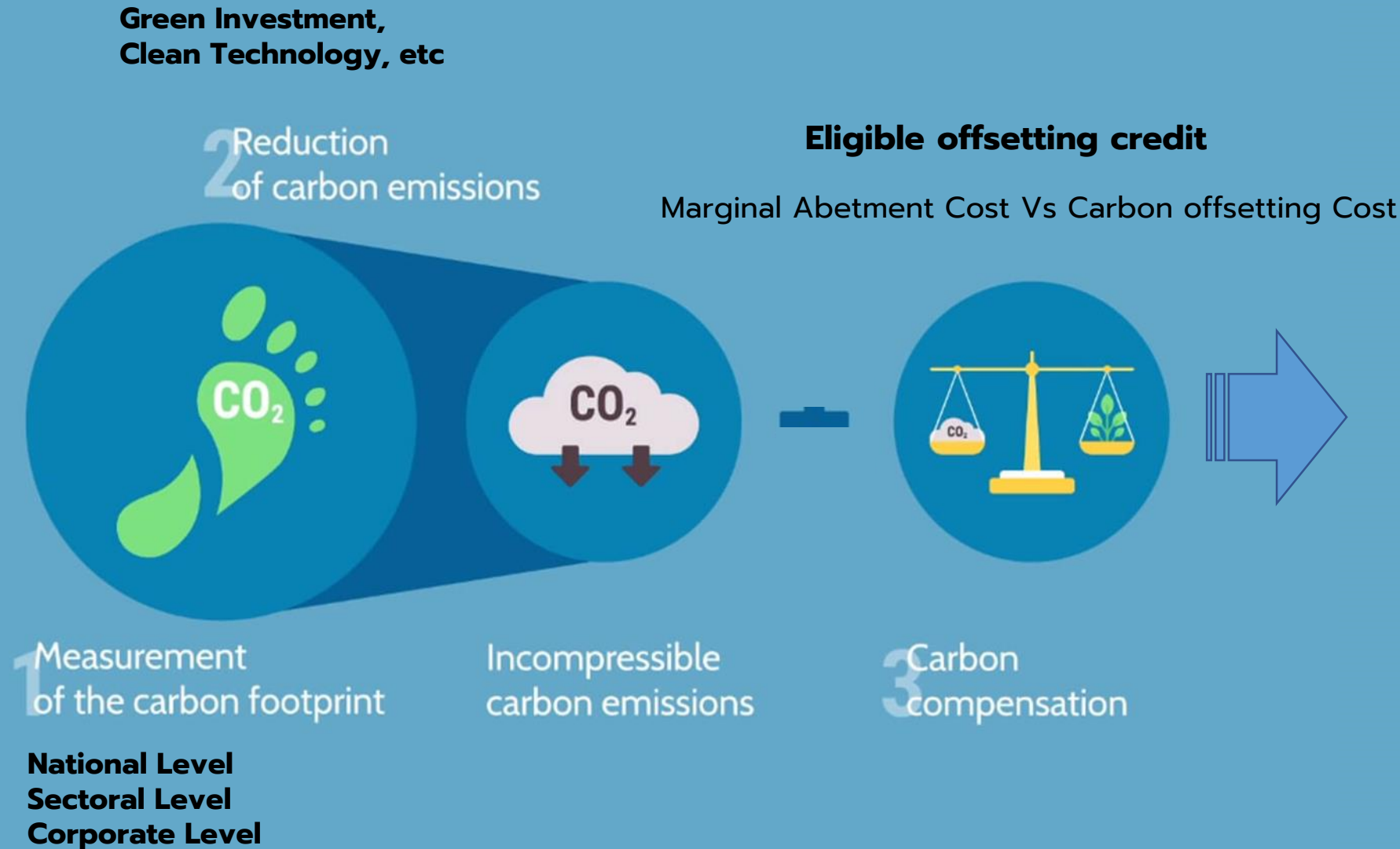
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กล่าวถ้อยแถลงต่อที่ประชุมผู้นำ COP26
ณ เมืองกลาสโกว์ สหราชอาณาจักร

1 พฤศจิกายน 2564



Thailand NDC will be 40% by 2030
Carbon neutrality by 2050
Net GHG emissions by 2065

What it means to be carbon neutral ?



Anthropogenic Greenhouse Gases

Source and Sink Category

GHG

Source and Sink Sub-Category

GWP₁₀₀ (AR5)

GHG Emissions and Removals



Energy

CO₂ CH₄ N₂O

- Fuel uses in power generation and refinery
- Fuel combustion in factories and transport
- Fugitive emissions from fuels



IPPU

CO₂ CH₄ N₂O
HFCs PFCs SF₆ NF₃

- Cement production
- Glass production
- Iron and Steel Production
- Chemical production
- Lubricant uses



Agriculture

CO₂ Emissions – Removals
CH₄ N₂O

- Enteric Fermentation in ruminant livestock
- Manure management of livestock
- Agriculture production (rice, fertilizer)
- Burning of crop residues



LULUCF

CO₂ CH₄ N₂O

- Land use remaining (Forest, Perennial Cropland)
- Land use conversion (deforestation, Reforestation and Afforestation)



Waste

CO₂ CH₄ N₂O

- Solid waste Disposal
- Biological treatment of solid waste
- Incineration and Open burning of waste
- Wastewater treatment and discharge

CO ₂	CH ₄	N ₂ O	HFCs	PFCs	NF ₃	SF ₆
1	28	265	138-12,400	6,630 - 11,100	16,100	23,500



2016
Source: BUR 3

253.9 MtCO₂e

31.5 MtCO₂e

52.2 MtCO₂e

(- 91.1 MtCO₂e)

16.8 MtCO₂e

354.4 MtCO₂e



2021
Source: Climatewatch

37,220 MtCO₂e

2,900 MtCO₂e

5,820 MtCO₂e

1,390 MtCO₂e

1,610 MtCO₂e

48,940 MtCO₂e



31 OCT - 12 NOV 2021
GLASGOW

COP26

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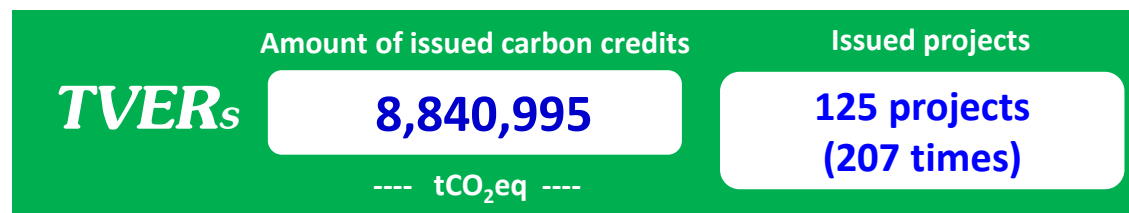
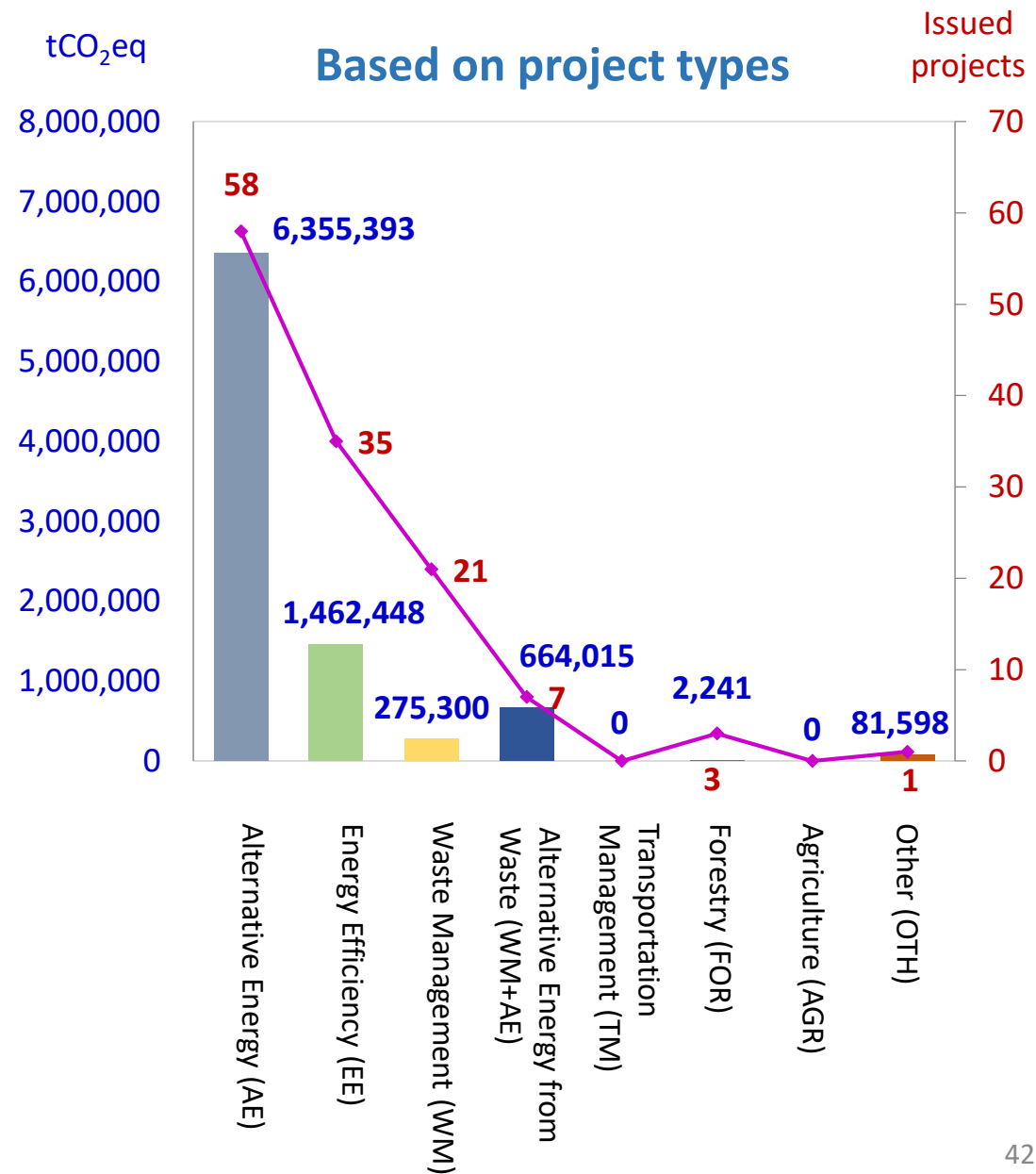
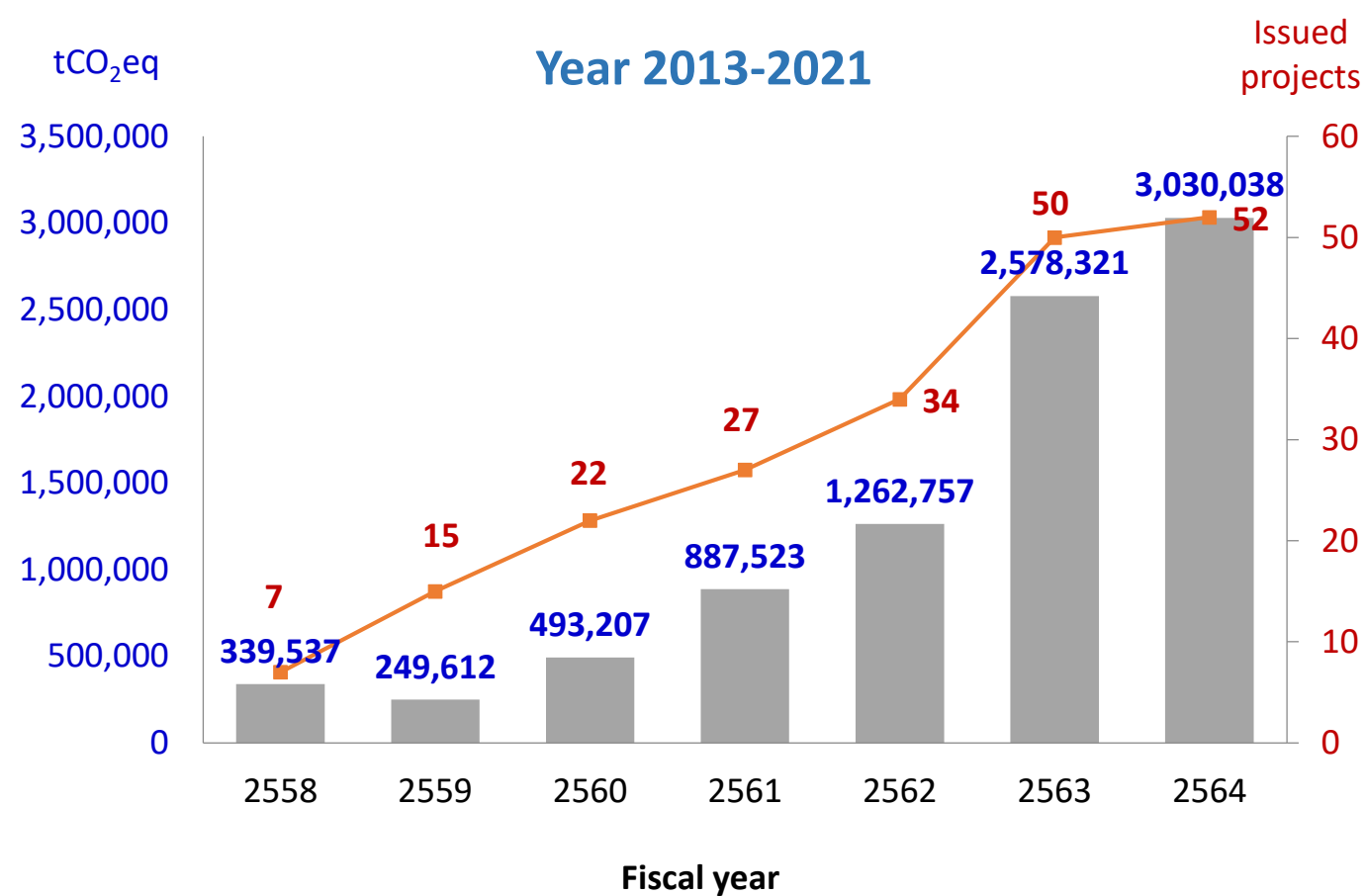
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กล่าวถ้อยแถลงต่อที่ประชุมผู้นำ COP26

ณ เมืองกลาสโกว์ สหราชอาณาจักร

1 พฤศจิกายน 2564

Thailand Voluntary Emission Reduction Program (T-VER Credits)



As of 5 OCT 2021



Thailand's Long-term Greenhouse Gas Emission Development Strategy

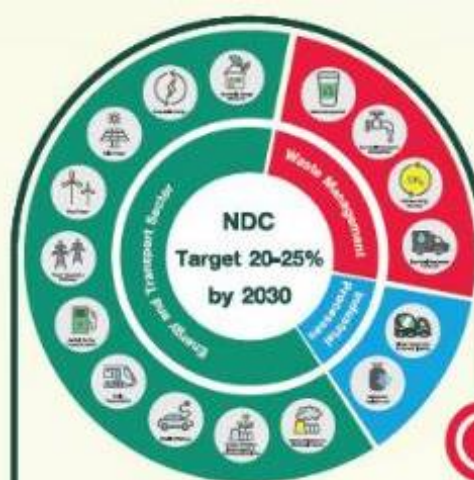
A transition towards low emission development

2018

Thailand's National Adaptation Plan (NAP)

VISION

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



Aims to reduce GHG by 40% with international support

2030

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

- Increase and Remain Primary Forest
- Regenerate Natural Forest Area
- Increase Economic Forest Area
- Increase and Remain Cropland
- Reduce Biomass Burning

Achievement of CO₂ removals of 120 MtCO_{2eq}

2037

CARBON NEUTRALITY

2050



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

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



Reduction of GHG emissions in various sectors:

- Energy
- Industrial Processes and Product Use (IPPU)
- Agriculture
- Waste
- Land Use, Land Use Change, and Forestry

2035

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



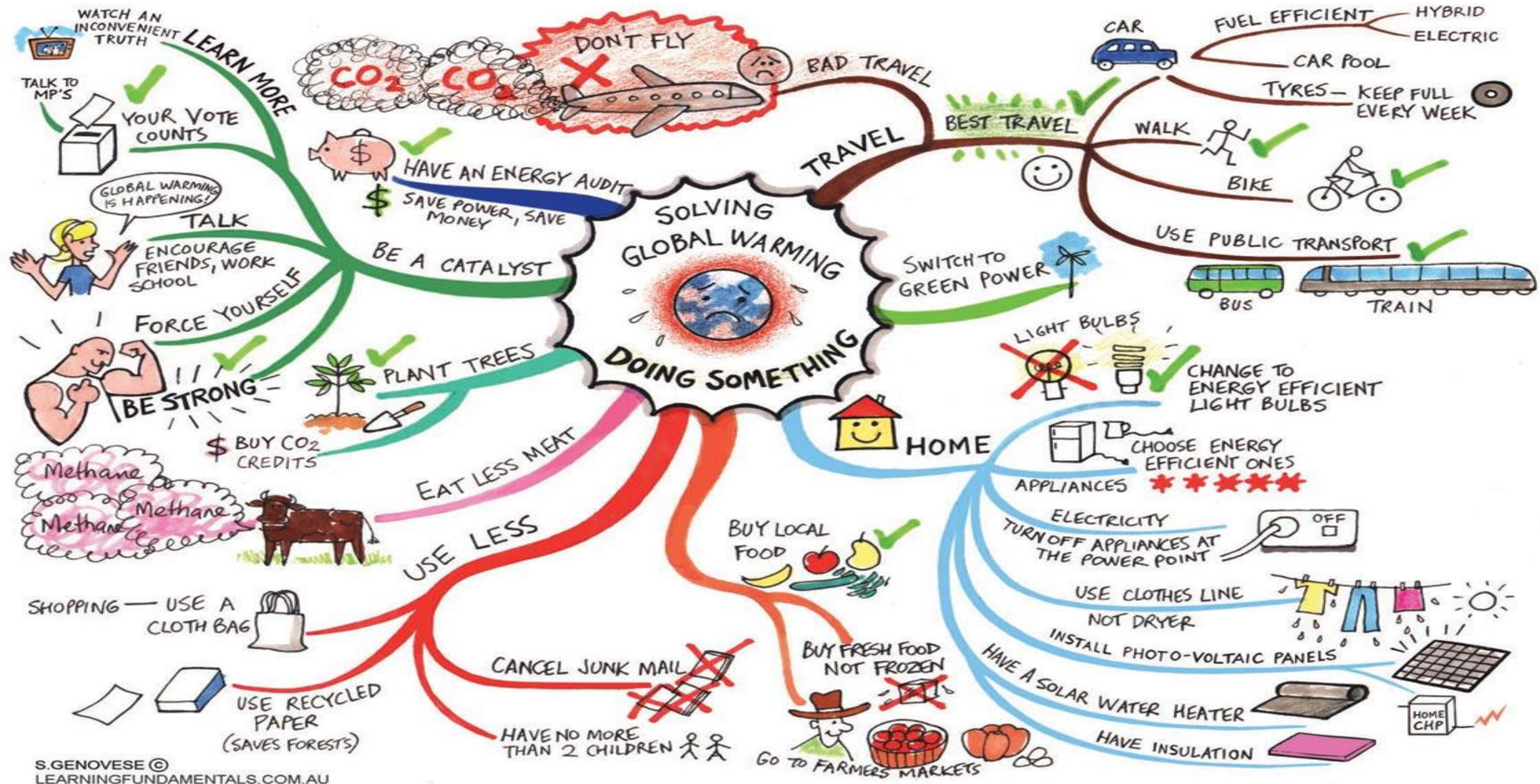
Thailand Carbon Neutral Network TCNN

A collaborative network for government agencies, private organizations, local authorities and communities to promote GHG reduction enhancement, sustainable growth of business and climate-friendly society towards the net zero emissions target according to the Paris Agreement's goal



TCNN Membership Type







THANK YOU



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