



GC Rated Number One

in the World for Sustainability
in DJSI's Chemicals Sector for
the Second Consecutive Year,
recognizing its Commitment
to Drive Sustainability
throughout the Supply Chain

MEMBER OF
**Dow Jones
Sustainability Indices**
In collaboration with  a RobecoSAM brand

Daiwa
Capital Markets

ESG CONFERENCE

10 September 2021

Disclaimer



This presentation includes forward-looking statements that are subject to risks and uncertainties, including those pertaining to the anticipated benefits to be realized from the proposals described herein. This presentation contains a number of forward-looking statements including, in particular, statements about future events, future financial performance, plans, strategies, expectations, prospects, competitive environment, regulation and supply and demand.

PTTGC has based these forward-looking statements on its views with respect to future events and financial performance. Actual financial performance of the entities described herein could differ materially from that projected in the forward-looking statements due to the inherent uncertainty of estimates, forecasts and projections, and financial performance may be better or worse than anticipated. Given these uncertainties, readers should not put undue reliance on any forward-looking statements.

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Agenda



01

Strategy executions

02

ESG in action

03

Achievements

Agenda



01

Strategy executions

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ESG in action

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Achievements

1H/2021: 3-Steps Strategy executions



Step Change



Step Out



Step Up



- Increase competitiveness by feedstock usage flexibility, Operation excellence
- Re-optimize investment portfolio
- Extend Downstream Value chain
- High Value Business (HVB) via M&A
- Enhance Sustainability

Organization & Digital Transformation
People / Organization / Digital / Culture



ORP (COD Jun'21)

Olefins capacity +25% with additional 500kta Ethylene +250kta Propylene

Restart PTA Line #1 (COD Apr'21)

Capacity +48% (970kta → 1,440kta)

PET Debottlenecking (COD Jun'21)

Capacity +36% (147kta → 200kta)

Portfolio management



Tender offer for VNT delisting

IN PROGRESS

- Expanding Ethylene Derivatives
- Increasing product coverage



GPSC share disposal

COMPLETED

- Focus on Chemical Business
- Maintain 10% of shares to retain policy and strategic governance objectives



100% share acquisition of a No.1 industrial coating resins company



allnex Integration Plan



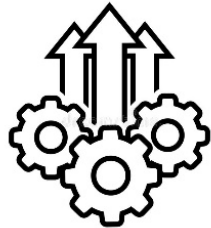
GC will dispatch resources from relevant functions to work alongside counterparts in allnex to plan and implement these initiatives

Key Success Factors for Post Deal Integration

- ▶ Value and preserve allnex strengths
- ▶ Maintain business continuity, allnex talent and leadership roles
- ▶ Collaborate to sustain and enhance growth and business performance
- ▶ Build partnership and learning across allnex and GC Group



1. Supply Chain Synergies



2. Operation Excellence



3. Asia Growth / M&A



4. Innovation



5. Sustainability Collaboration

3 phases Integration Plan

SPA Signing



Day-1 Closing

Day-100

Phase 1

Integration planning / preparation

Phase 2

Phase 3

Ongoing collaboration

GC's International Investments



Investment benefits delivered...

- **Growing PLA Leadership position in high value applications**
- **Strong financial performance to GC** through steady Equity income and Dividend received
- **Strong HDI position is key contributor to GC's Performance Materials and Chemicals business**
- Resilience to Covid and market situation with **earnings uptrend trajectory realized in Q2'21**
- **Strength in Specialty Oleochemicals** has contributed **consistent EBITDA**
- Specialty oleochemicals growth driver **especially in the North America and Europe.**

...are foundation for growth under "Step Out" and "Step Up" Strategies



- **Capacity Expansion** (PLA plant 2 in Thailand and Blair expansion).
- **Focusing on high value application**



- **Maintain its strong position** by capacity expansion and products development



- Explore the **collaboration opportunities with allnex**



- **Adopt to changes in Market conditions**
- **Revisit Basic Oleochemicals platform**

NatureWorks Plant 2



Announcement of NatureWorks Plant 2 by Cargill, GC, and NatureWorks



NatureWorks

100%

Plant2



Lactic Acid



Lactide



Polylactic acid (PLA) 75 KTA



- **Location:** Nakhon Sawan Biocomplex, Thailand
- **Raw materials:** sugar from local supply of Sugarcane
- **COD:** 2024



World's First Integrated PLA facility

Bio
Circular
Green

Support Thailand's BCGs economy model



Add value to Thai agricultural raw materials



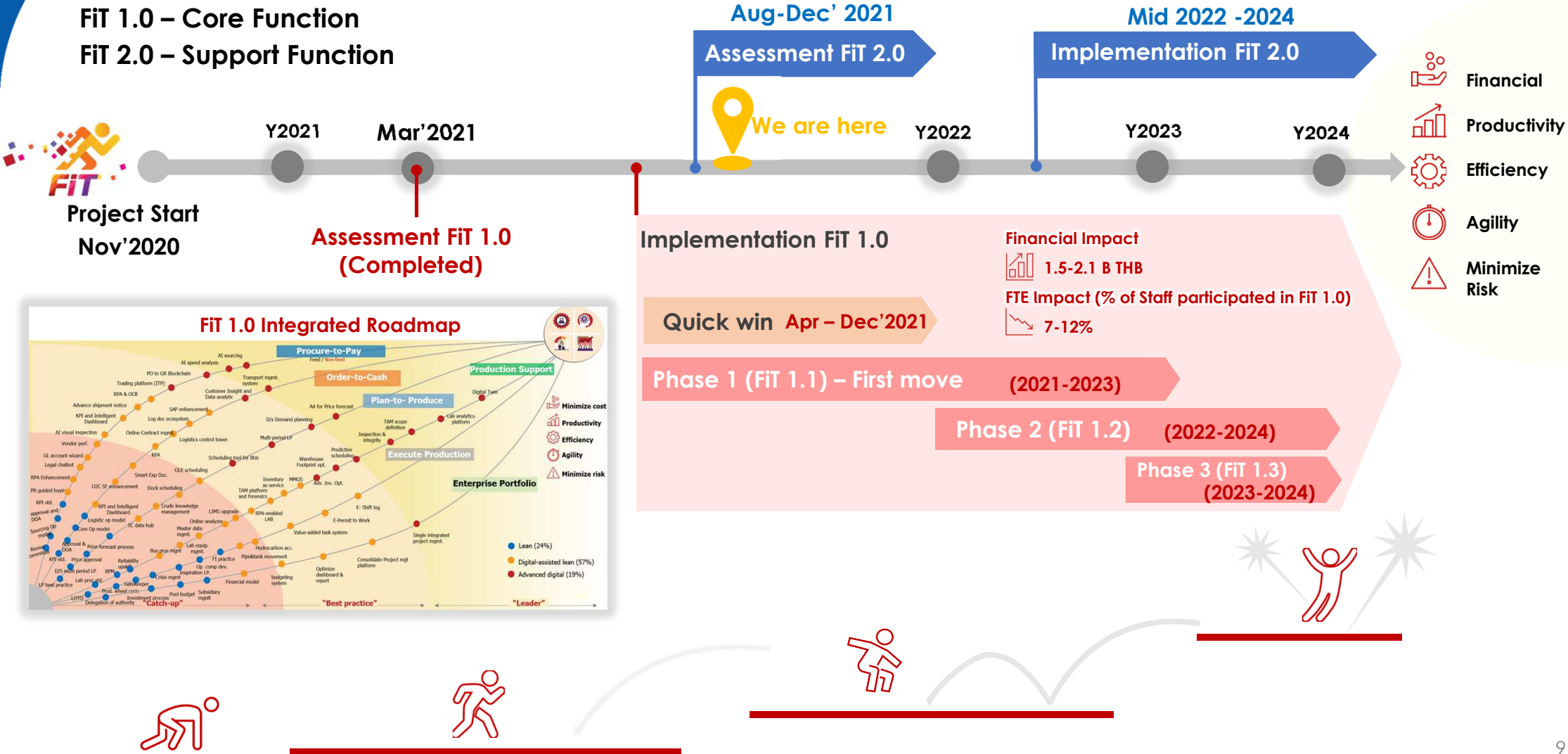
World's Most Advanced biopolymer technology



Ingeo™ PLA supports variety of market demand for sustainable and low carbon materials

Project FiT : Our Journey to Lean and Process Redesign

A Phased approach combining works of
 FiT 1.0 – Core Function
 FiT 2.0 – Support Function



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Achievements

2021 GC's materiality

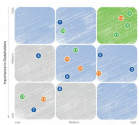


Dynamic changes in global contexts & stakeholder expectations refine our top priority **Sustainability Development Goals**



WORLD
ECONOMIC
FORUM

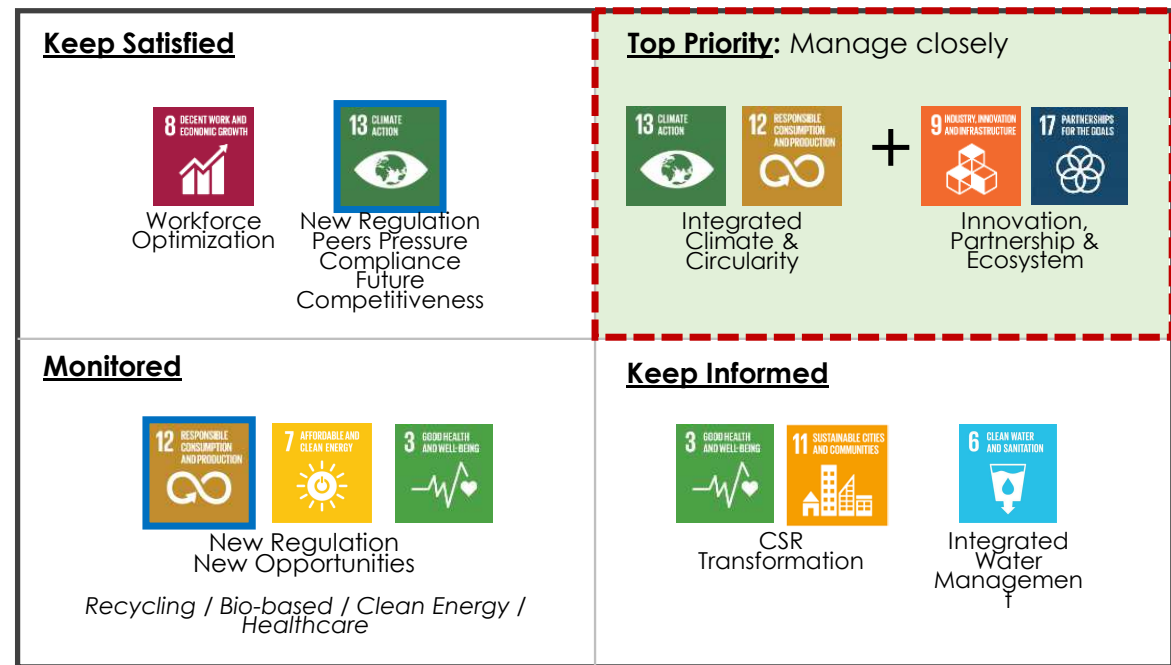
2021 Top Five
Global Risks by
Likelihood



GC's Materiality
matrix



External Power / Influence



Interest of Stakeholders*

Step up strategy 2021-2030

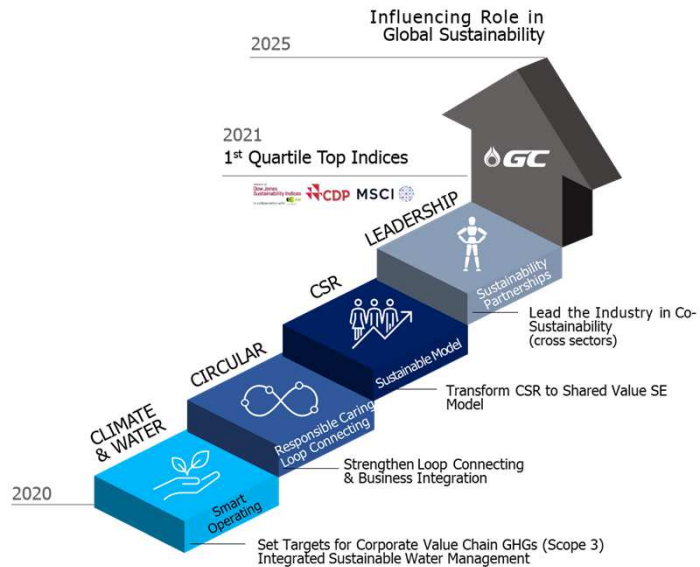


Strengthen actions toward the long-term **net zero** target

2020



2021



The 1st company in Thailand recognized in

LEAD LEVEL

Among 41 global lead participants

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

Sustainability Award
Gold Class 2021

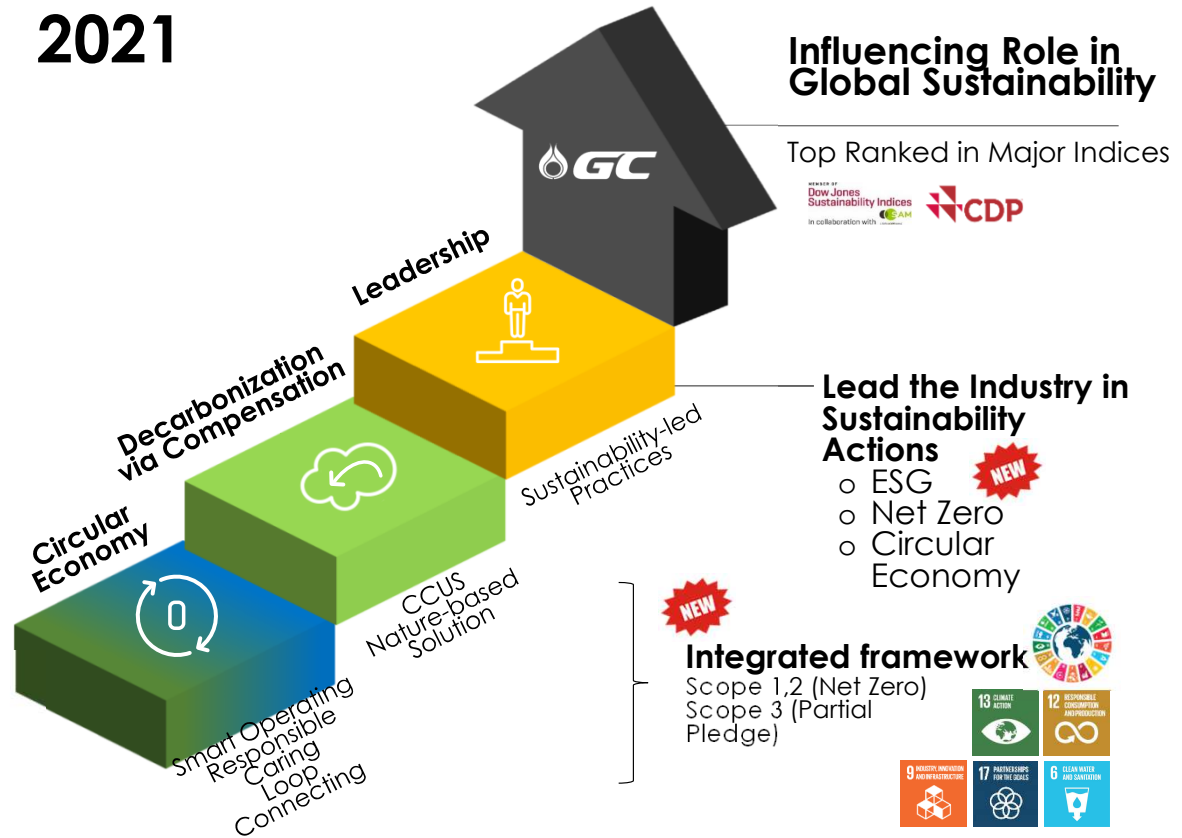
S&P Global



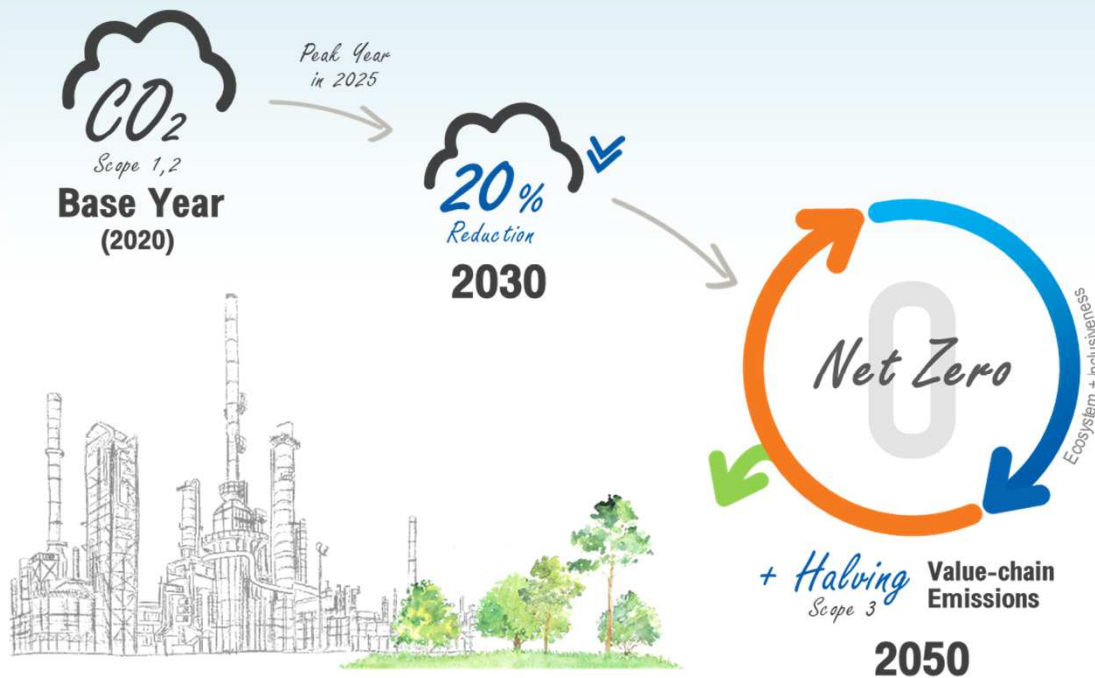
The only company in chemicals sector ranked
No.1 FOR 2 CONSECUTIVE YEARS

The only company in chemicals sector of Asia awarded
GOLD CLASS MEDAL

The 1st and only Thai-own conglomerate to achieve
A LIST: CLIMATE CHANGE & WATER SECURITY



Step Up On-Going Climate Actions



Ambitious and fully align with the
Paris Agreement

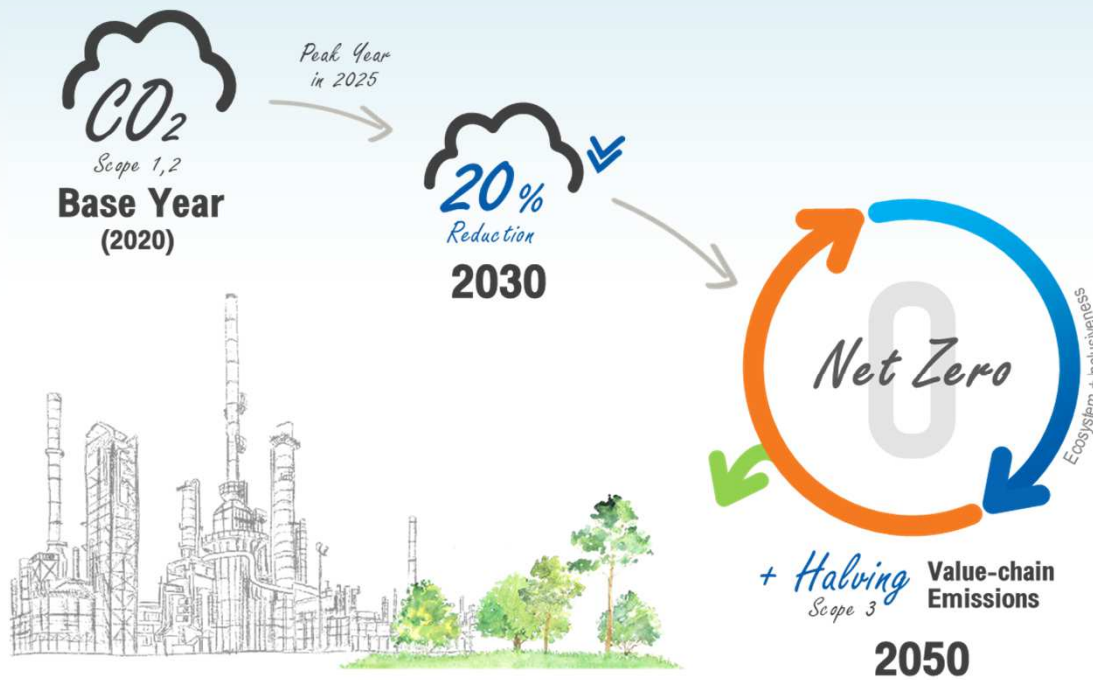


Decarbonization without compromising
Business Growth



Long-term portfolio reshape to
High Value / Low Carbon Business

Step Up On-Going Climate Actions



Efficiency-driven: “Responsible Production”

Smart Operating



Operational Efficiency
Flaring Reduction



Low Carbon Power / Heat
Low Carbon Process
Value Chain Initiatives

Portfolio-driven:

Responsible Caring



Portfolio Transition to Low Carbon
- Monetization / Divestiture
- HVB, Green, Recycling & Circularity

“Offer the Best”

Value-added Applications / Upcycling

Loop Connecting



Waste Management Solution
Mechanical & Chemical Recycling

“Stop the Waste”

Compensation:



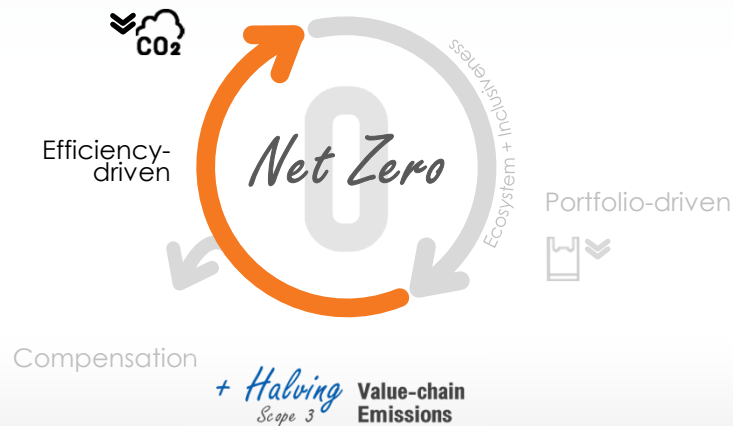
Carbon Capture: Utilization and Storage (CCUS)
Nature-based Solutions



The GC's decarbonization approaches

Efficiency-driven

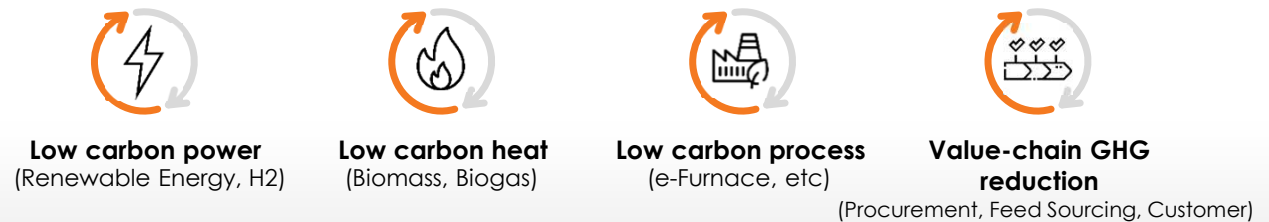
GC's Integrated Framework Climate Actions & Circularity



• The current approaches



• The additional approaches

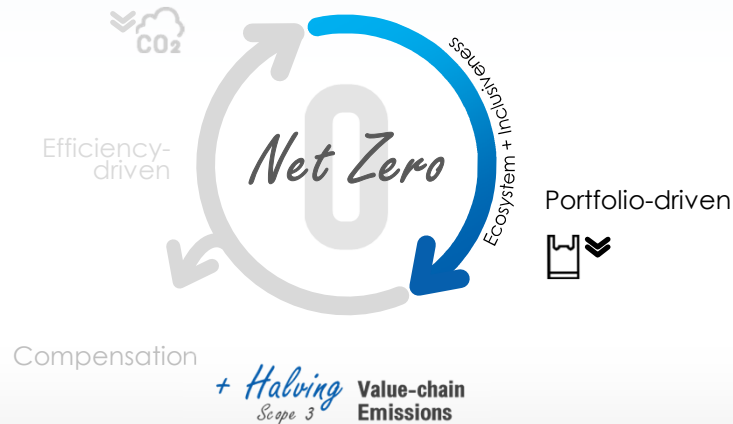


The GC's decarbonization approaches



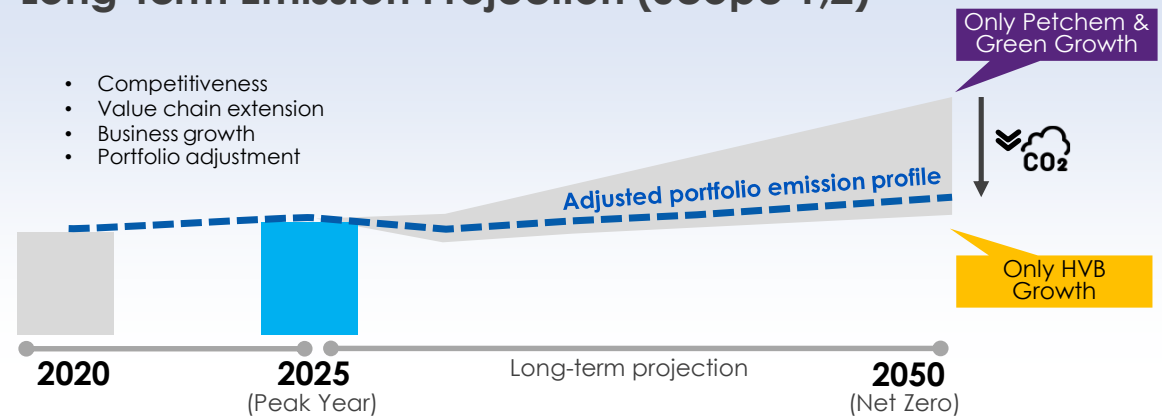
Portfolio-driven

GC's Integrated Framework Climate Actions & Circularity



Long-term Emission Projection (Scope 1,2)

- Competitiveness
- Value chain extension
- Business growth
- Portfolio adjustment

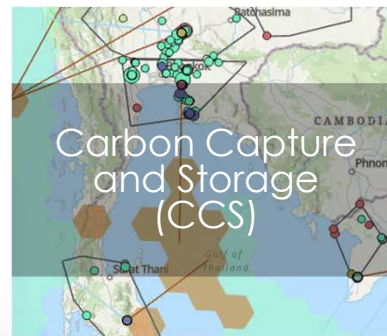
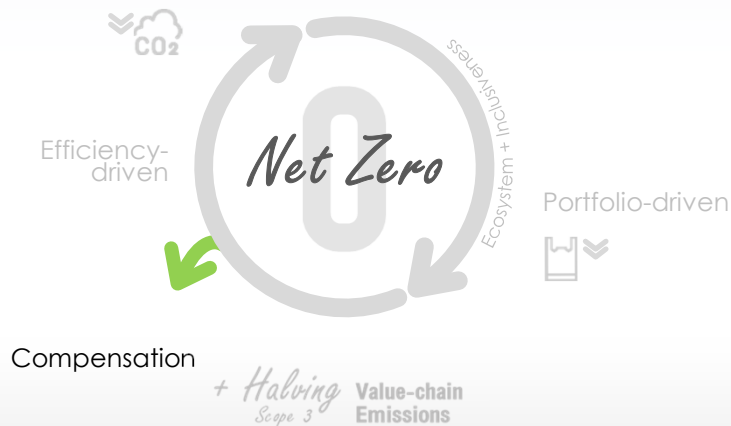
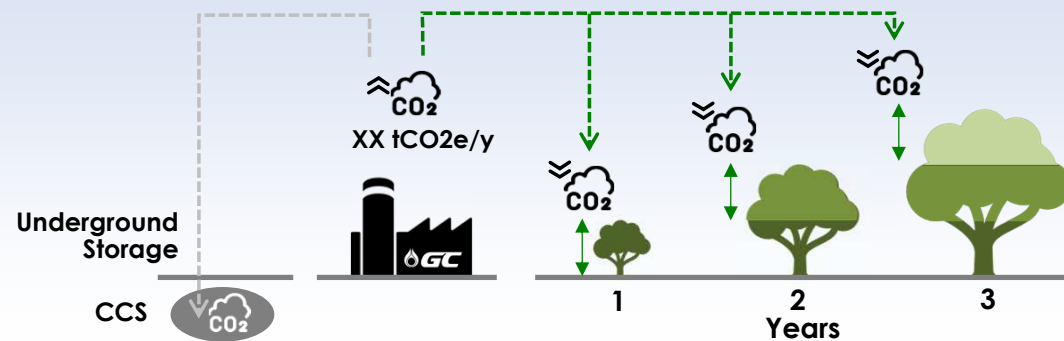


The GC's decarbonization approaches

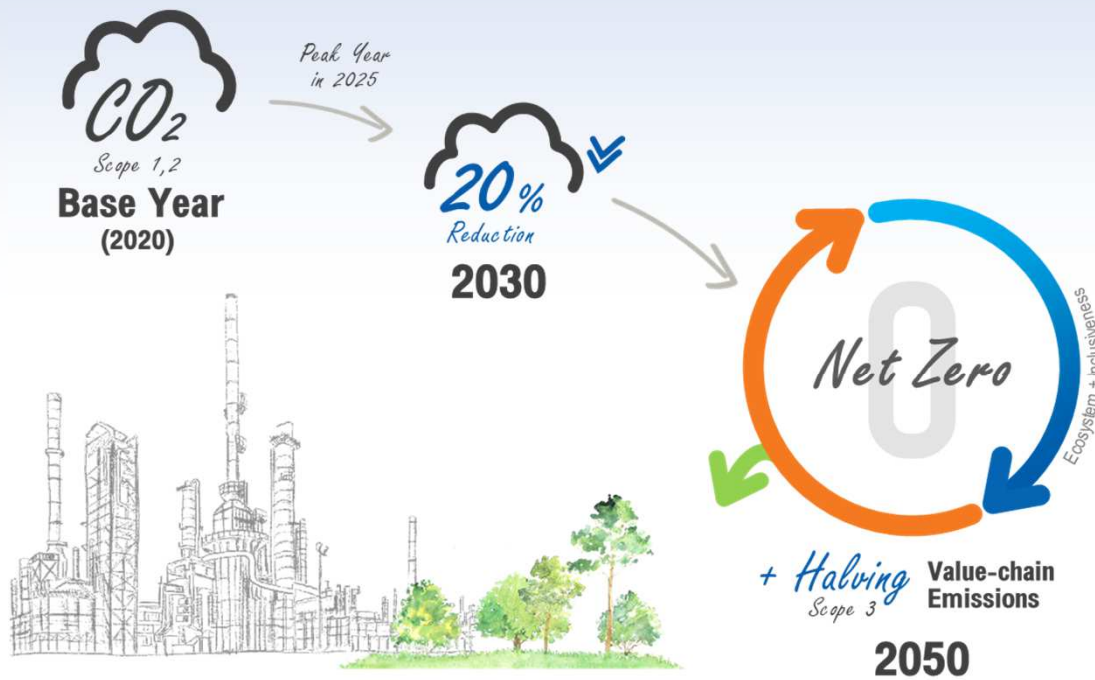


Compensation

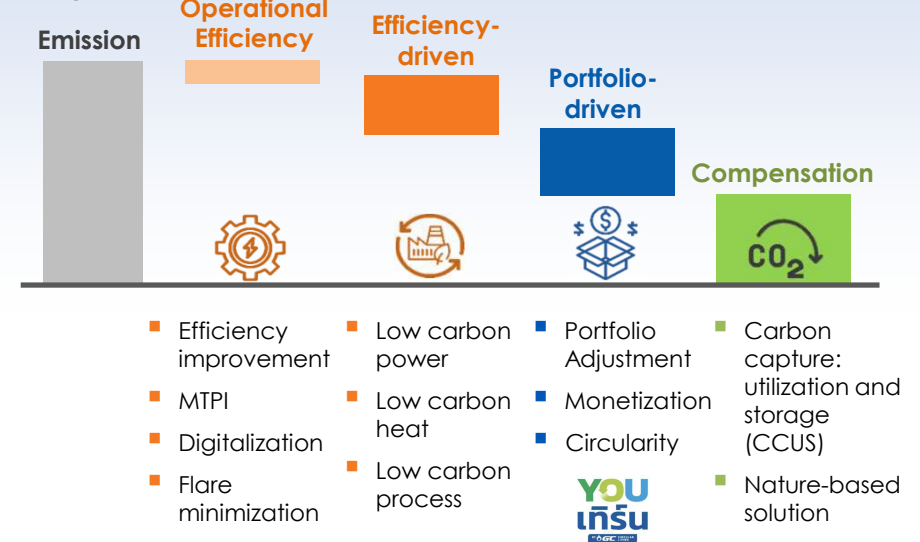
GC's Integrated Framework Climate Actions & Circularity



The “Net Zero” commitment



Scope 1,2



Scope 3

- Value-chain GHG reduction



GC supports Thailand

Social Enterprise Models & CSR Programs

GC Contribute to 'Society' with GC Sustainability Framework (ESG)



ECONOMY

8 DECENT WORK AND ECONOMIC GROWTH

Decent Work & Economic Growth



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Responsible Consumption & Production



ENVIRONMENT

13 CLIMATE ACTION

Climate Action



15 LIFE ON LAND

Life on Land



SOCIETY

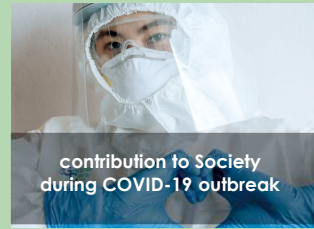
4 QUALITY EDUCATION

Quality Education



3 GOOD HEALTH AND WELL-BEING

Good Health & Well-Being



Promote economic growth by Social Enterprise Model: “Pracharat Samakki”



สานพลัง
ประชารัฐ

ประชารัฐรักสามัคคี
ระยอง
วิสาหกิจเพื่อสังคม

Goal : This project could enhance Thai economy, allowing small business operators to generate more income for the local community

Three areas involvement : Agriculture, Agriproduct processing (SME/OTOP), Community tourism

‘Rayong Influencer Challenge 2021’



1.9 MB of revenue contribution to Social Enterprises in 8 weeks



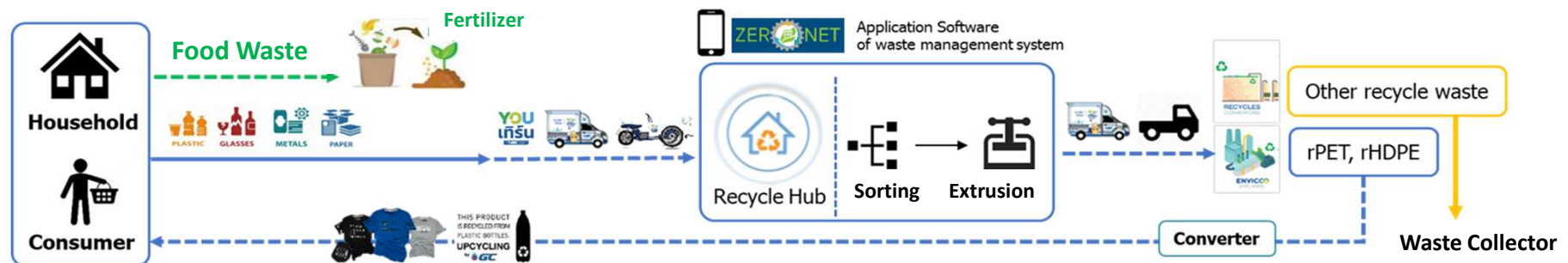
Key influencers in public and private sectors promote products from Social Enterprises



Climate Action



Community Waste Model : integrated plastic waste sorting & generate income to society by Social Enterprise Model



Groundwater bank : Project to resolve droughts for mango farms in Rayong province



Building 17 groundwater banks



Helping 2 communities in Rayong province

Good Health & Well-Being

Challenges of GC for value contribution to Society during COVID-19 outbreak



Responsive to Pandemic



Communication

Media amid the pandemic



Cooperation with stake holders

Waste Management



Innovation



Product



Community & Communication



Internal & External collaboration

Good Health & Well-Being



GC joined forces with 84 plastic entrepreneurial partners under “Greater Care Charity by GC & Customers” project

Providing support to Hospitals and Community Isolation

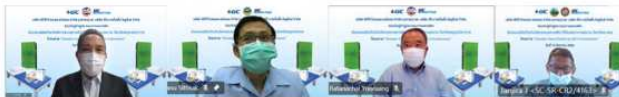


ร่วมกับผู้ค้าผู้ประกอบการพลาสติกจำนวน 84 บริษัท

ส่งมอบผลิตภัณฑ์ทันตกรรมพลาสติกให้กับโรงพยาบาลสนาม จังหวัดสมุทรสาคร จังหวัดสมุทรปราการและ จังหวัดระยอง

ภายใต้โครงการ “Greater Care Charity by GC & Customers”

วันที่ 14 สิงหาคม 2564



Contributing Medical Equipment to Hospitals



Good Health & Well-Being

Delivered chemical innovative products
to medical staffs in nationwide

77 
provinces

As of 1 September 2021



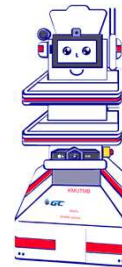
>1,200

Hospitals/Health
Offices/Government Agencies



11,364

Coverall
(Greater Care by GC)
made with rPET



2

Medical Robot: IRAPs
SHaRE - aGIVeR



3,024,595

disposable plastic gowns



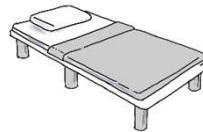
94,500

Face Shield



505 sets

Of medical protective suits
and powered air-purifying
respirators (PAPR)



650 sets

Field hospital beds, HDPE Cabinets, and fans

800 pairs

of shoe cover



360 tons

Liquid oxygen



200 machines

Chula High Flow Nasal
Canular (HFNC)



48

LLDPE Rotomolding
Lockers



13

CoviClear nanosilver
disinfection units



26 tons

of plastic film for COVID-19
prevention applications



79,636 liters

of alcohol-based hand sanitizer



905 red bins



103,100 red bags

Made with high-quality InnoPlus plastic, for
infections waste to prevent the spread of
pathogens



For more information on our overall Donations:
<https://sustainability.pttggroup.com/en/business-resilience/covid-19-information-hub/overall-donations-by-gc-group-and-partners>

Good Health & Well-Being

GC Volunteers

Collecting used PET bottles from employees at the Drop Point areas around GC location to create value-added through its innovations and products in order to bring about good public health



Drop Points
GC Plants



YOUturn



Recycle Hub



Employee engagement to solve plastic waste problem and take part in supporting dedicated medical personnel



Collecting used bottles to supporting medical sector during COVID-19 pandemic



ร่วมบริจาคขวด PET หรือขวดพลาสติกใสที่ใช้แล้ว
ที่จุด Drop Point เพื่ออัปไซเคิลเป็นชุด PPE
หมุนเวียนพลาสติกใช้แล้ว...
เพื่อเพิ่ม พื้นที่ปลอดภัยให้ด่านหน้า



หากไม่สะดวกมาที่จุดรับพลาสติกใช้แล้ว
สามารถนำส่งไปรษณีย์มาส่งโครงการ ได้ที่ :
โครงการแยกขวดช่วยหมอ บริษัท ทีเออาร์เอฟ จำกัด
(อาคารบริหารจัดการขยะ) 999 หมู่ 1 ต.หนองปรือ
อ.บางพลี จ.สมุทรปราการ 10540

50 +
Drop Points

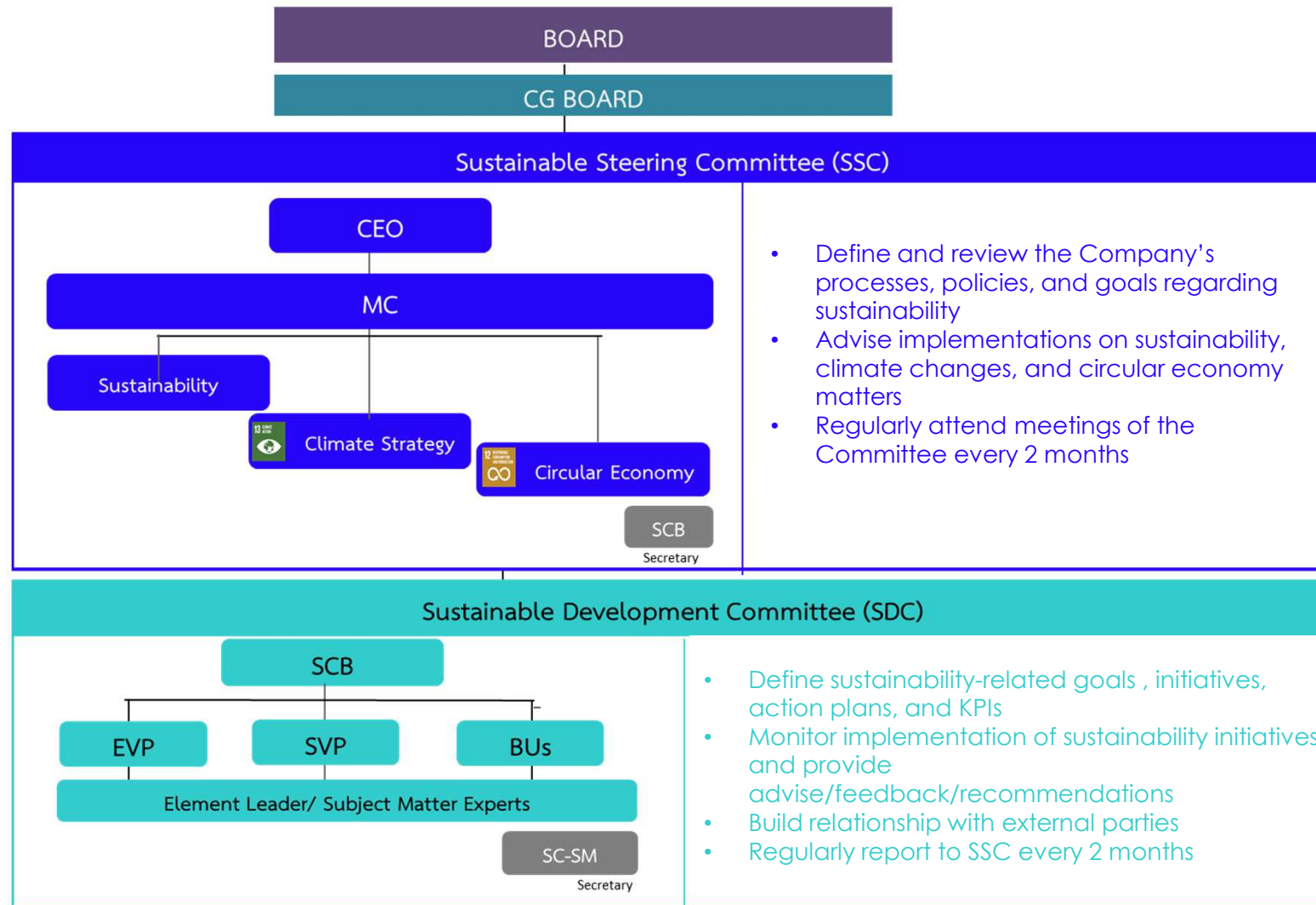


90,000
Bottles



5,000
PPE

Good Governance : Sustainability



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Achievements

Recognitions



The 1st company in
Thailand recognized in

LEAD LEVEL

Among 41 global
lead participants

MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM

Sustainability Award
Gold Class 2021
S&P Global



The only company in chemicals sector ranked

No.1 FOR 2 CONSECUTIVE YEARS

The only company in chemicals sector of Asia awarded

GOLD CLASS MEDAL

The 1st and only Thai-own conglomerate to achieve

A LIST: CLIMATE CHANGE & WATER SECURITY



"Honor"
3 consecutive years



6 consecutive years



(Top 5)



(Top 3)



(Excellence)
3 consecutive years



Distinguished



The Asset Awards



CSR-DIW Continuous
Award



Low Emission Support
Scheme (LESS) Certificate

Recognitions



MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM

The only company in chemicals sector ranked

No.1 FOR 2 CONSECUTIVE YEARS

1st ranked

- ✓ CSR
- ✓ Health & Safety



1st ranked

- ✓ Envi Policy
- ✓ Climate
- ✓ Water

1st ranked

- ✓ Risk
- ✓ Customer Relation
- ✓ Policy
- ✓ Innovation
- ✓ Cybersecurity



The 1st and only Thai-own conglomerate to achieve

A LIST: CLIMATE CHANGE & WATER SECURITY



CLIMATE



WATER

GC Sustainability Sharing





Thank You

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Appendix

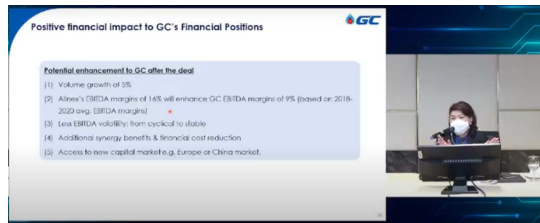
1H/2021 Key Financial Highlights

Achieving “step out” with allnex



- Growth platform into Industrial Coating Resins
- GC EBITDA margins enhancement
- Less EBITDA volatility: from cyclical to stable
- Additional synergy benefits & financial cost reduction
- Expand portfolio
- Refinancing allnex to minimize investment requirement

allnex communication



Maintaining Attractive Credit Ratings

STANDARD & POOR'S

BBB (Stable)

MOODY'S

Baa2 (Stable)

Fitch Ratings

AA+ (th) (Negative)

WFH, productive and connected reaching customers and key stakeholders

Virtual conference activities

- Quarterly Analyst meeting
- SET opp. Day
- Roadshow
- AGM



1H/2021 performance highlights: Maintain a good momentum



| Revenue | Adjusted EBITDA | Sharing from JVs&Asso. | Operating Profit | Net Income |
|------------|-----------------|---------------------------|------------------|--------------|
| 213,657 MB | 29,472 MB | 4,225 MB | 19,228 MB | 34,730 MB |
| (+32% QoQ) | (+130% QoQ) | (+>200% QoQ) | (+>200% QoQ) | (+>200% QoQ) |



Revenue growth from higher chemicals price



ARO, PC

Stronger Aromatics, Performance Materials and Chemicals (PC)



OLE

Continual strong of Olefins & Derivatives



Increasing contribution from JVs & Asso.



U-rate maximization

REF 101% ARO 100% OLE 98% (+ORP) POL 105%



Extra items

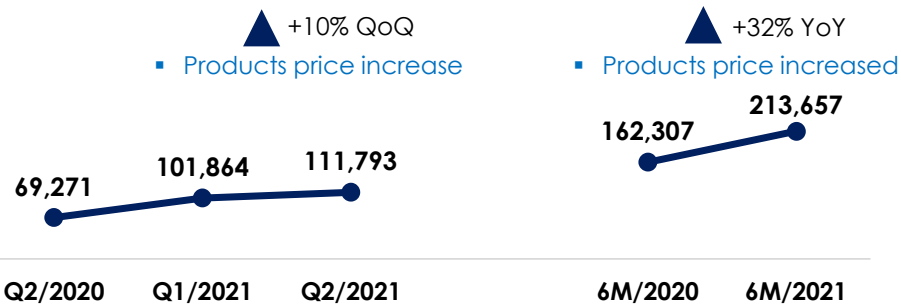
- Gain from Restructuring in Power Business (GPSC)
- Loss from impairment of investment (Emery)

Olefins and Performance Materials and Chemicals remained strong



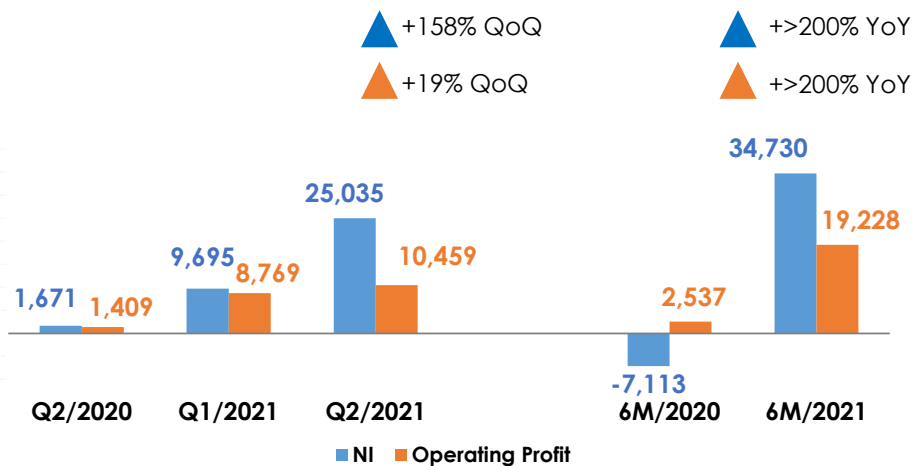
Revenue

Unit: MB



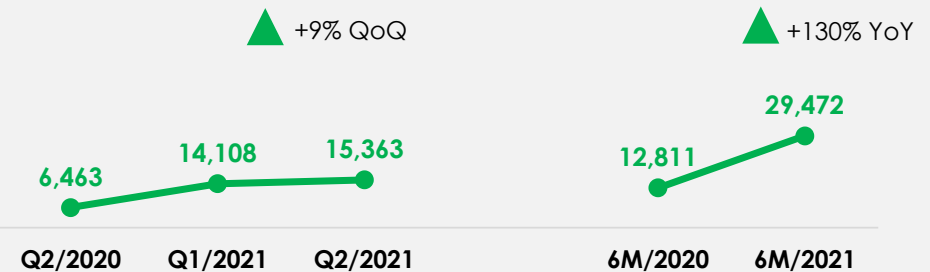
Operating Profit and NI

Unit: MB



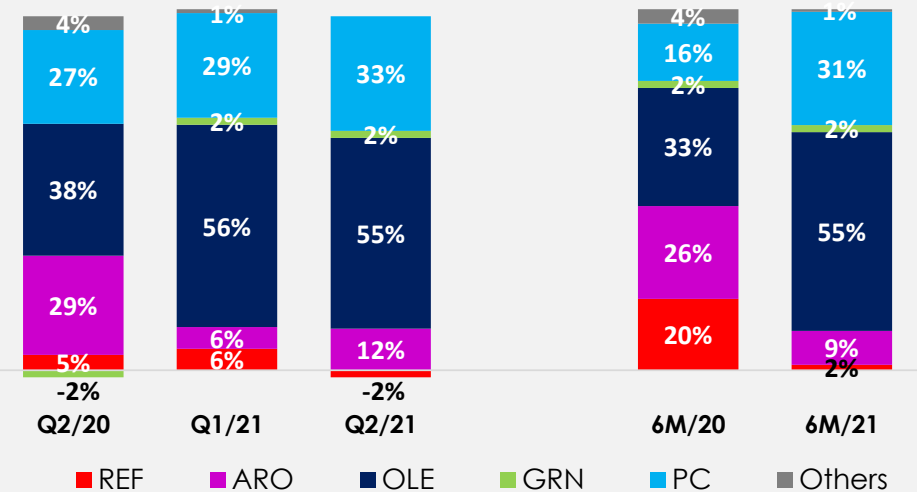
Adjusted EBITDA*

Unit: MB



Note: Adjusted EBITDA refers EBITDA excluding stock gain/(loss), NRV and Extra item

Adjusted EBITDA contribution by Business units

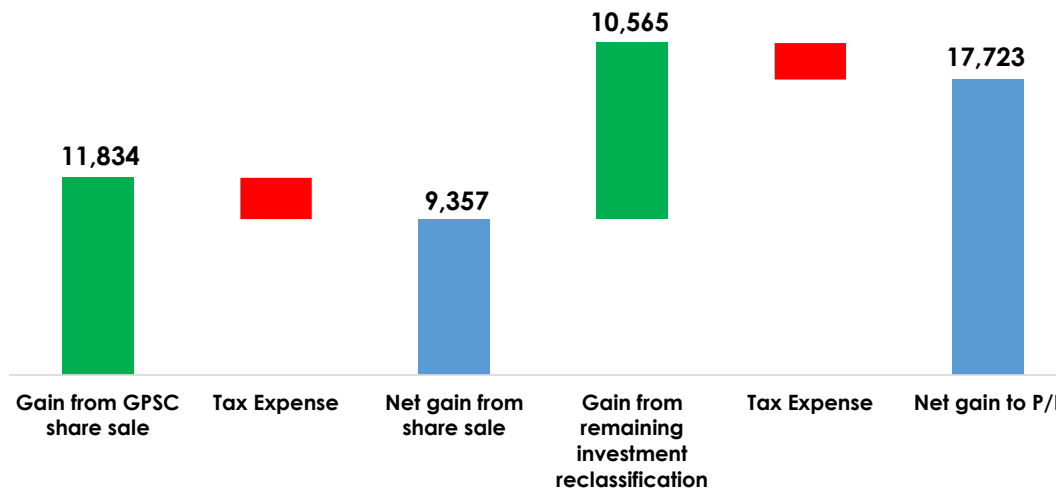


Extra Items

1

Gain from Restructuring in Power Business

(Unit: MB)



Subsequence:

- The **remaining 10%** shareholding will be treated as "Investment in financial asset" and **marked-to-market in OCI** every period-end
- Change accounting method from "share of profit" to "dividend income"

2

Impairment in Oleochemicals Business

- Emery's impairment of 3,021 MB related to change in business outlook of Oleochemical business in Asia Pacific was impacted by Indonesia's policy change in tax for export of palm oil announced in 2021
- Value after impairment reflect Emery's focus on Specialty oleochemical business, which is Emery's strength

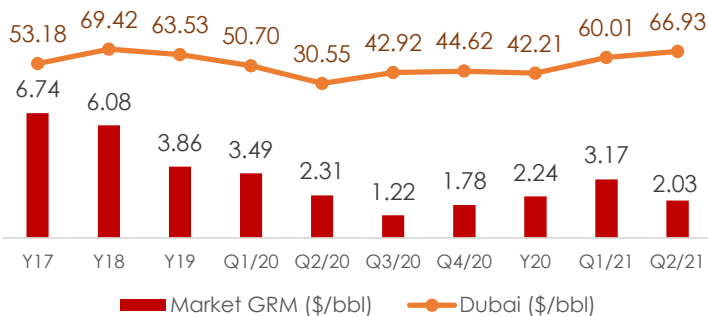
Overview of business unit performance



Refinery

- ↓ **YoY** : Adjusted EBITDA declined mainly due to lower GRM and higher crude premium.
- ↓ **QoQ** : The market gain support from the re-opening society in the US and Europe and the strictly control of supply from OPEC+. However, Adj EBITDA declined mainly due to lower GRM affected by higher crude premium.

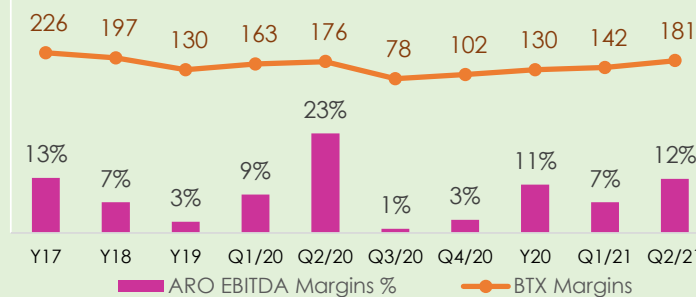
| | Q2/20 | Q1/21 | Q2/21 |
|--------------|-------------|-------------|-------------|
| Adj.EBITDA | 291mb | 841mb | -370mb |
| Dubai | \$30.55/bbl | \$60.01/bbl | \$66.93/bbl |
| Mkt GRM | \$2.31/bbl | \$3.17/bbl | \$2.03/bbl |
| Diesel-Dubai | \$5.73/bbl | \$4.74/bbl | \$5.25/bbl |
| LSFO-Dubai | \$8.42/bbl | \$13.45 | \$11.24/bbl |
| U-rate | 102% | 102% | 101% |
| Major T/A | - | - | - |



Aromatics

- ↑ **YoY** : Adjusted EBITDA increased supported by healthy downstream demand in BZ chain eg. SM and PHN.
- ↑ **QoQ** : Adjusted EBITDA increased as PX was supported by a peak polyester seasonal, while BZ was supported by healthy downstream demand from SM, PHN chain, and remaining of low inventory in China.

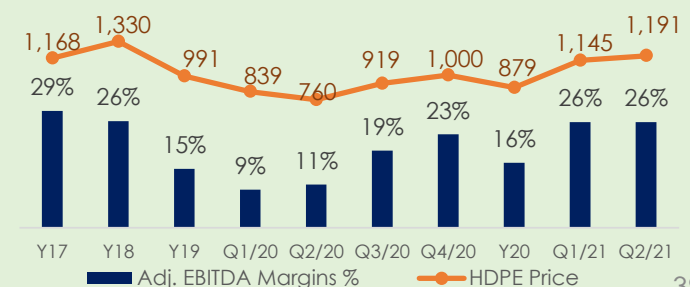
| | Q2/20 | Q1/21 | Q2/21 |
|------------|---------|---------|---------|
| Adj.EBITDA | 1,846mb | 859mb | 1,885mb |
| P2F on BTX | \$176/t | \$142/t | \$181/t |
| PX spread | \$271/t | \$241/t | \$283/t |
| BZ spread | \$146/t | \$240/t | \$393/t |
| U-rate | 99% | 98% | 102% |
| Major T/A | - | - | - |



Olefins and Derivatives

- ↑ **YoY** : Adjusted EBITDA margin strongly improved as PE price gradually recovered, after declined to the bottom in Q2/21, supported by demand from packaging and Hygiene products.
- ↑ **QoQ** : Adjusted EBITDA margin remained strong at 26% as PE market was supported by higher crude oil price and tight supply in the region due to seasonal T/A.

| | Q2/20 | Q1/21 | Q2/21 |
|---------------|---------|-----------|-----------|
| Adj.EBITDA | 2,474mb | 7,784mb | 8,460mb |
| PE Price | \$793/t | \$1,275/t | \$1,305/t |
| EBITDA margin | 11% | 26% | 26% |
| OLE U-rate | 100% | 104% | 93% |
| POL U-rate | 102% | 105% | 105% |
| OLE Major T/A | - | - | - |
| POL Major T/A | LL1 | HD | LD |



Overview of business unit performance (cont'd)



Green Chemical

- ↑ **YoY** : higher ME price & higher FA sales volume supported improving performance.
- ↓ **QoQ** : mainly due to lower ME sales volume as lower demand impacted from COVID-19, even FA performance improved.

| | Q2/20 | Q1/21 | Q2/21 |
|------------|----------|----------|----------|
| Adj.EBITDA | -129mb | 334mb | 236mb |
| ME P2F | B3.11/kg | B3.11/kg | B3.11/kg |
| FA P2F | \$332/t | \$265/t | \$274/t |
| U-rate ME | 79% | 69% | 62% |
| U-rate FA | 89% | 53% | 89% |



Performance Material

- ↑ **YoY** : Adj EBITDA sharply increased due to solid performance of PHN chain supported by tight supply and downstream demand. With strong PO/PY performance help boost Adj EBITDA as well.
- ↑ **QoQ** : Adj EBITDA increased due to continuation strong performance in PHN chain and PO/PY. With stronger performance from higher contribution margin of VCR.

| | Q2/20 | Q1/21 | Q2/21 |
|------------|-----------|-----------|-----------|
| Adj.EBITDA | 1,717mb | 4,130mb | 5,110mb |
| PHN P2F | \$614/t | \$467/t | \$462/t |
| BPA P2F | \$298/t | \$1,428/t | \$1,934/t |
| U-rate | 117% | 119% | 115% |
| Major T/A | - | - | - |
| PO | \$913/t | \$2,205/t | \$2,115/t |
| Polyols | \$1,229/t | \$2,608/t | \$2,544/t |



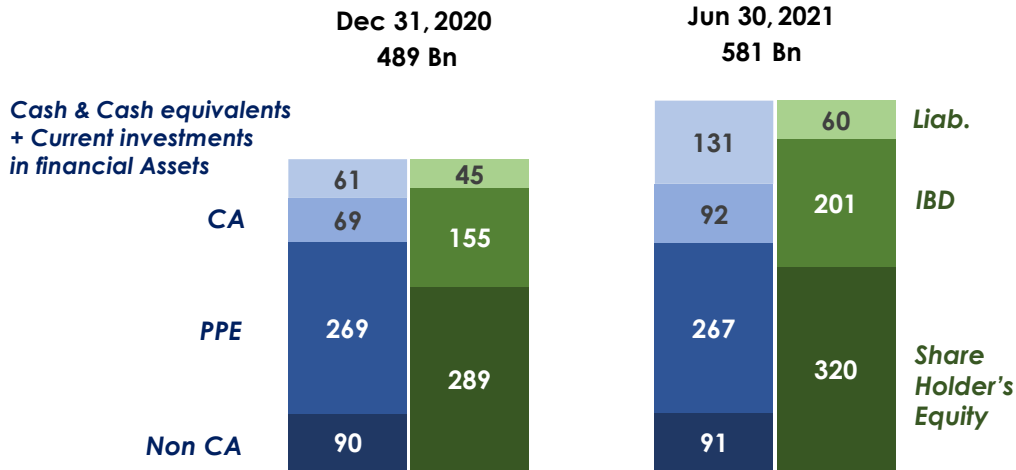
Other businesses

- ↑ **YoY** : NI contribution sharply increased mainly from Chemicals business (PP, PVC, AN, MMA), which supported by the progress of vaccination rollout, higher demand, and supply disruption.
- ↑ **QoQ** : NI contribution increased with the mentioned reason.

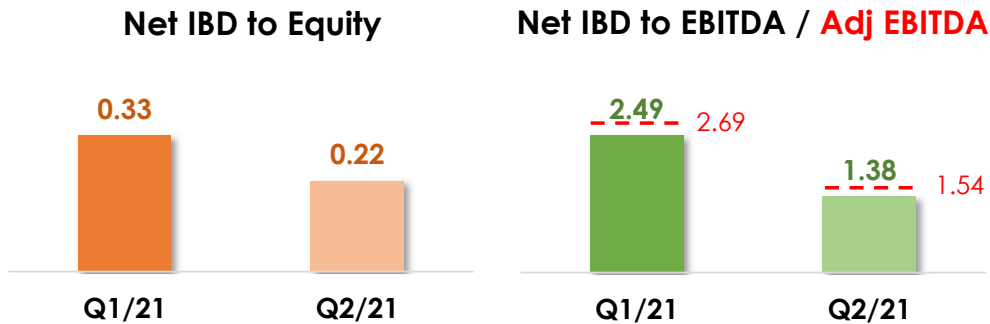
| | NI (mb) | Q2/20 | Q1/21 | Q2/21 |
|-----------------------------|---------|------------|--------------|--------------|
| Chemicals | | 7 | 1,043 | 1,594 |
| Power | | 424 | 449 | 317 |
| Bio plastic | | 325 | 224 | 306 |
| Others | | 51 | 184 | 108 |
| Total JVs & Asso | | 807 | 1,900 | 2,325 |
| AN - Propylene | | \$308/t | \$1,122/t | \$1,471/t |
| PP - Propylene | | \$227/t | \$379/t | \$327/t |

Strong Financial Position

Statements of Financial Position

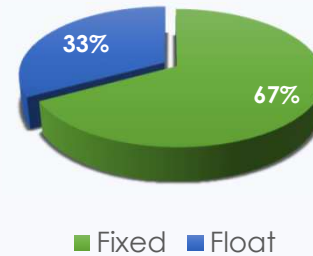


Statements of Financial Position

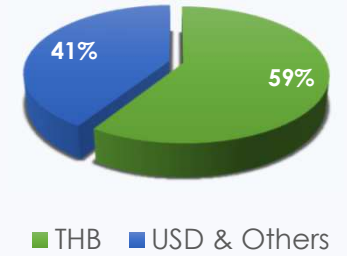


Long Term Debt Portfolio

Interest Breakdown



Currency Breakdown



Total Long Term Debt THB 191 Bn
As of 30-Jun-21

Avg. Loan Life 6.77 yrs

Cost of Debt 3.17 %

Affirmed Credit Rating after allnex acquisition

**STANDARD
& POOR'S**

BBB
(Stable)

MOODY'S

Baa2
(Stable)

FitchRatings

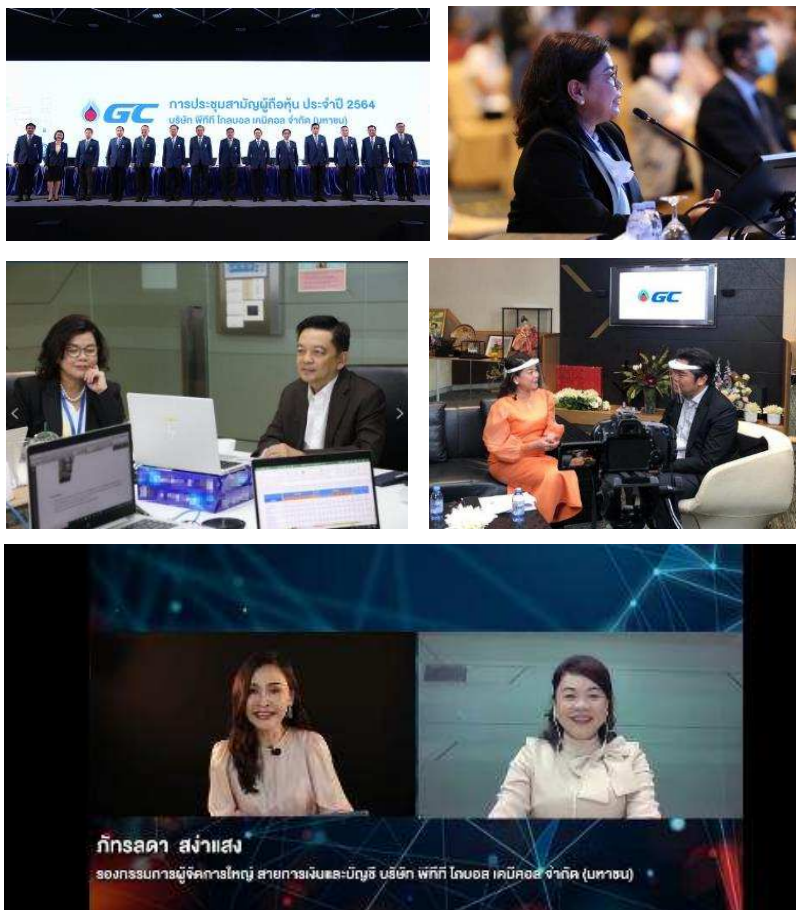
AA+ (th)
(Negative)

Committed Capex to support GC's sustainable growth

| Projects | Total 2021-2025 | Estimated Annual CAPEX (M.USD) | | | | |
|-------------------------------------|--------------------|--------------------------------|------------|------------|-----------|----------|
| | | 2021 | 2022 | 2023 | 2024 | 2025 |
| 1) Key projects | | | | | | |
| - Recycled Plant: ENVICCO | 25 | 25 | | | | |
| - Super Engineering Plastic: KGC | 30 | 28 | 2 | | | |
| - OMP | 157 | 47 | 91 | 19 | | |
| 2) Other projects | 429 | 204 | 110 | 89 | 24 | 2 |
| Total | 641 | 304 | 203 | 107 | 24 | 2 |
| 3) allnex acquisition | 4,802 | 4,802 | | | | |
| 4) Tender offer for VNT delisting | 238 | 238 | | | | |
| GC group Grand total | 5,681 | 5,344 | 203 | 107 | 24 | 2 |
| 5) JV Own Investment: NTR | 600 | | | | | |
| <u>Funding plan</u> | | | | | | |
| i) Internal cash | | | | | | |
| ii) PTT DLC (credit term extension) | | | | | | |
| iii) PTT shareholder loan | | | | | | |
| iv) Bridge financing from banks | | | | | | |

- Notes:
1. Group annual maintenance ~ 250-300 M.USD
 2. Other projects such as IT & digital, new office facility, etc.
 3. FX → 31.5 THB : USD / 1 Eur : 1.2 USD

1H/2021 PTTGC's key announcements



- 1 Olefins 2 Modification Project (OMP) FID (Jan'21)
- 2 Issuance of US\$ 1,250 Million Debentures (Mar'21)
- 3 Tender offer for VNT delisting plan (Mar'21)
- 4 Annual General Meeting (Apr'21)
- 5 Treasury Stock share resale approval (May'21)
- 6 GPSC share disposal completion (Jun'21)
- 7 allnex acquisition (Jul'21)
- 8 NatureWorks PLA plant#2 FID (Aug'21)

Maintenance Shutdown Schedule 2021 (reflected T/A postponement plan from COVID-19)

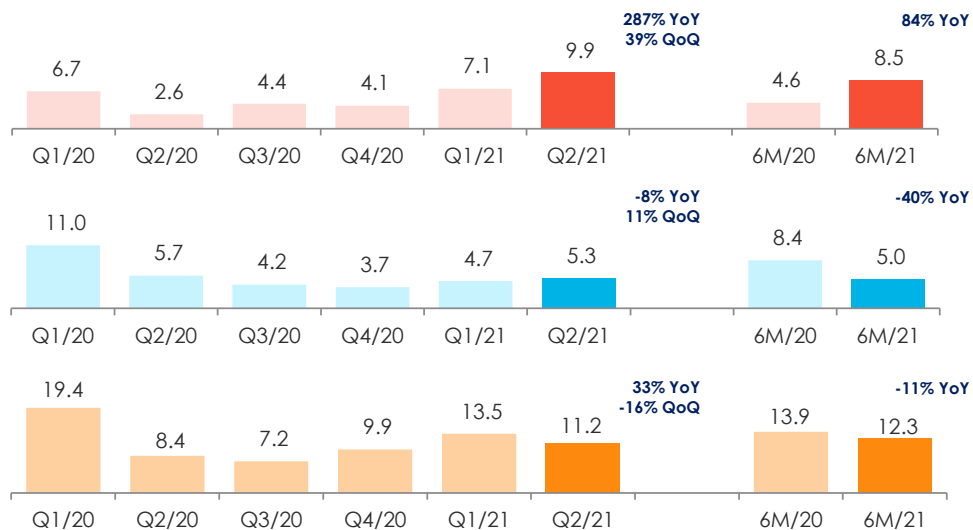


| Plant | | 2021 | | | | | | | | | | | | 2022 |
|-------|--------------|------|-----|---------|-----|-----|-----|---------|-----|-----|-------|-----|-----|------|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| OLE | Cracker | | | | | | | | | | 39 | | | 39 |
| | Oleflex | | | | | | | | 37 | | 37 | | | |
| POL | HDPE | | | 15 BPE1 | | | | 14 BPE2 | | 38 | HDPE2 | | | |
| | LDPE | | | | | 12 | | | | | 24 | | | |
| | | | | | | | | | | | 15 | | | |
| | LLDPE I | | | | | | | | | | 20 | | 20 | |
| | LLDPE II | | | | | | | | | | | | | |
| | PS | | | | | | | | | 12 | | | | |
| EOB | TOCGC | | | | | | | | | | | | | |
| | EA | | | | | | | | | | | | | |
| PHN | Phenol I | | | | | | | 32 | | | | 30 | | |
| | Phenol II | | | | | | | | | | | | | |
| | BPA | | | 15 | | | | | | | | | | |
| REF | Refinery | | | | | | | | | 13 | | | | |
| ARO1 | Aromatics I | | | | | | | | | | | | | |
| ARO2 | Aromatics II | | | | | | | | | | | | | |

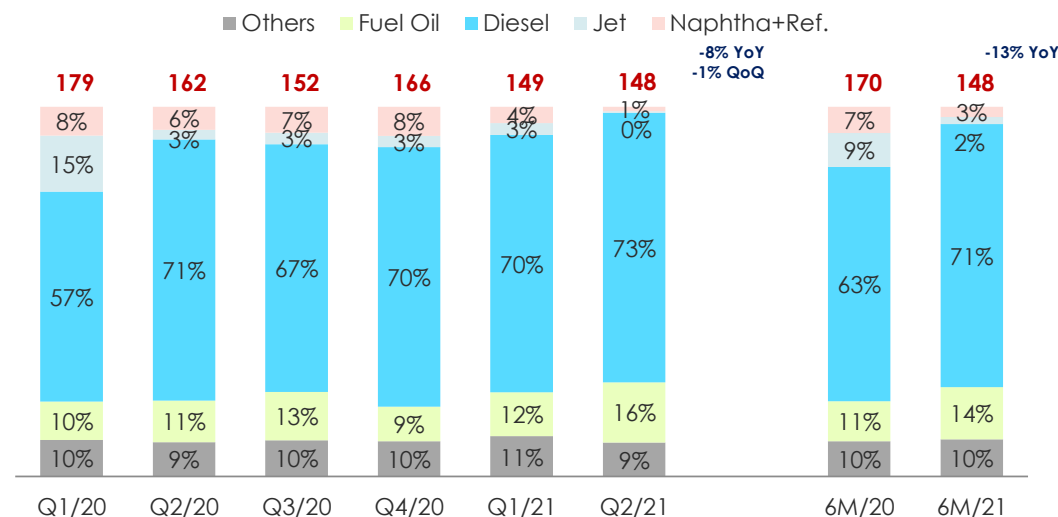
Refinery Performance



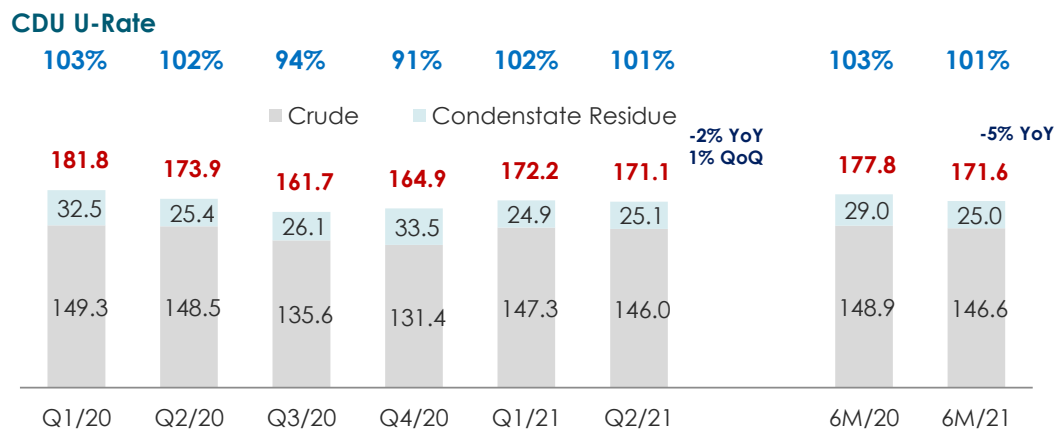
Petroleum Products - Dubai Spread (USD/BBL)



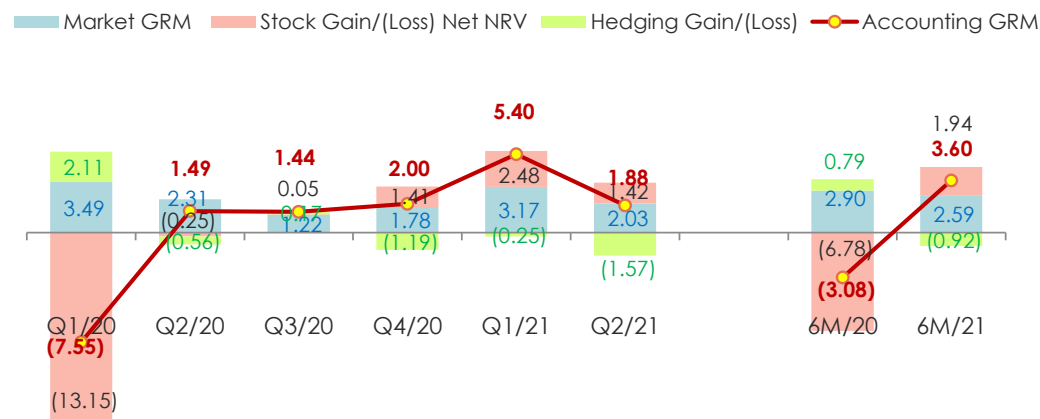
Refinery Sales Volume (KBD)



Refinery Intake (KBD)



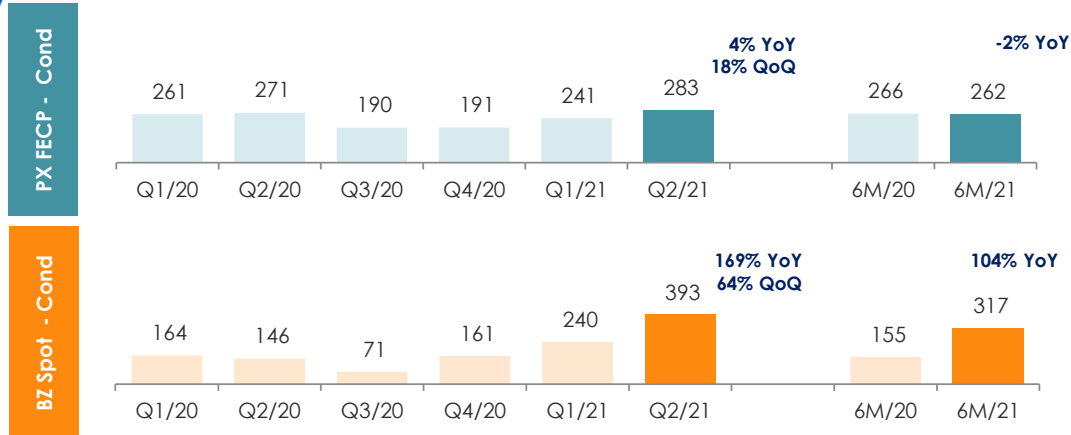
Gross Refinery Margin (USD/BBL)



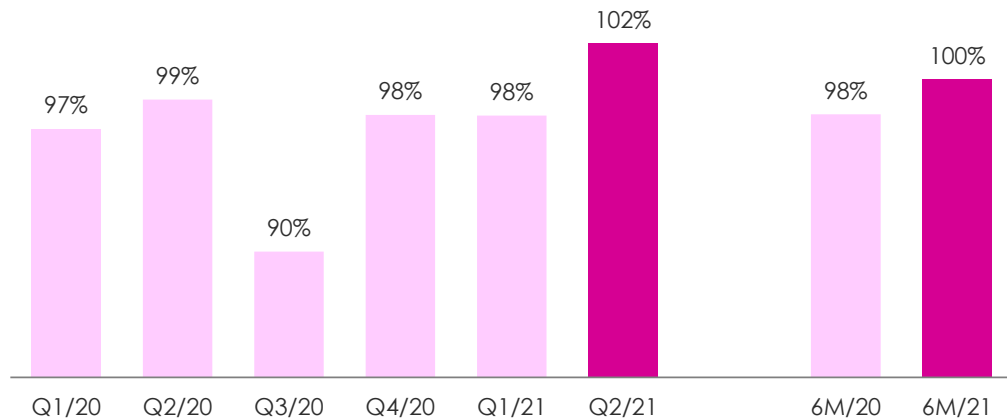
Aromatics Performance



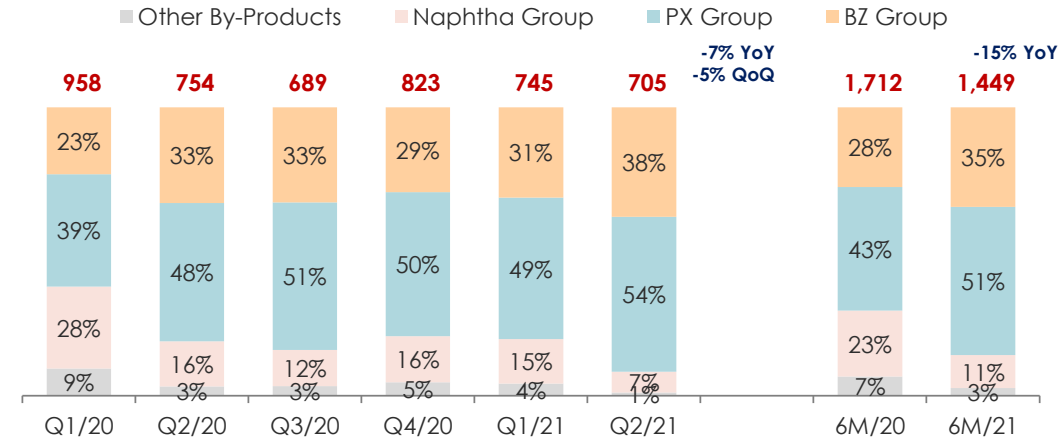
Aromatics Products Prices and Spread (USD/Ton)



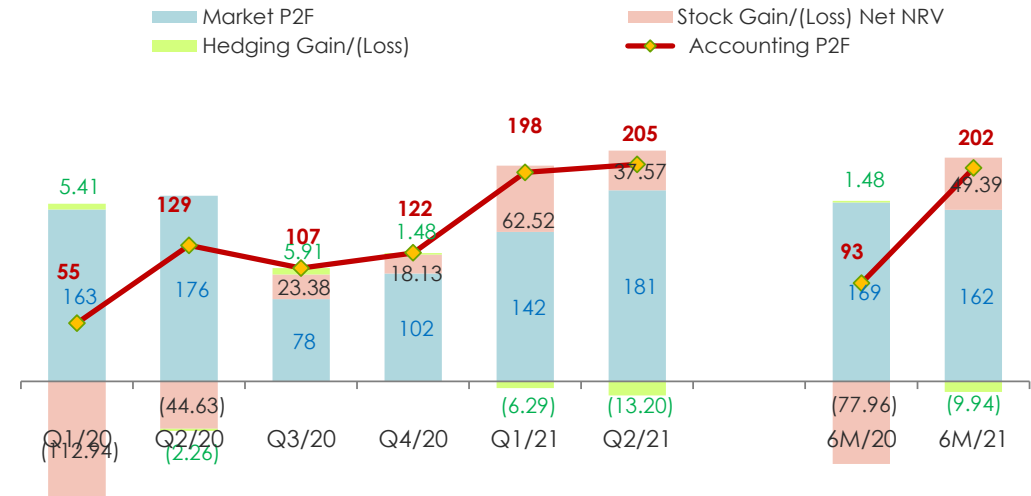
BTX U-Rate (%)



Aromatics Sales Volume (Ktons)



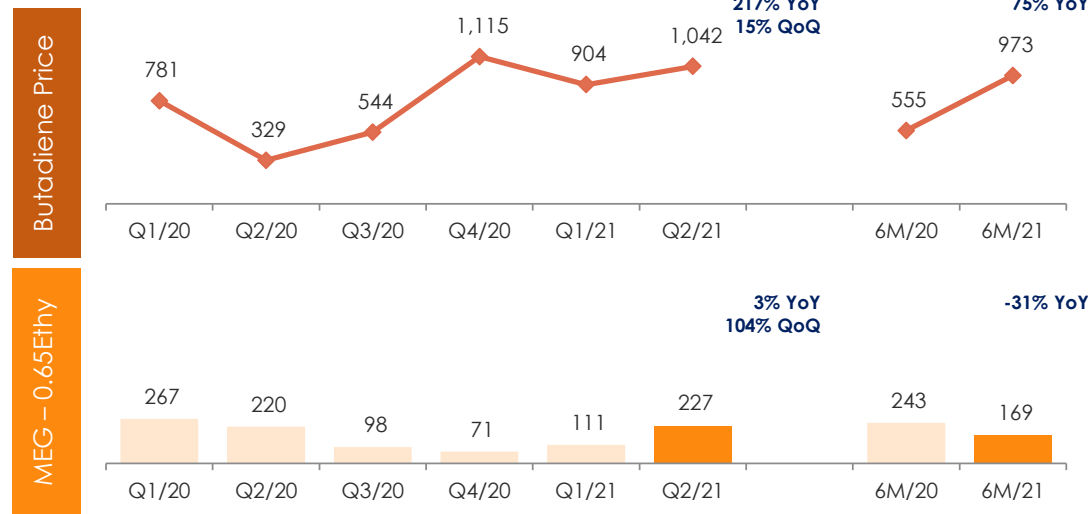
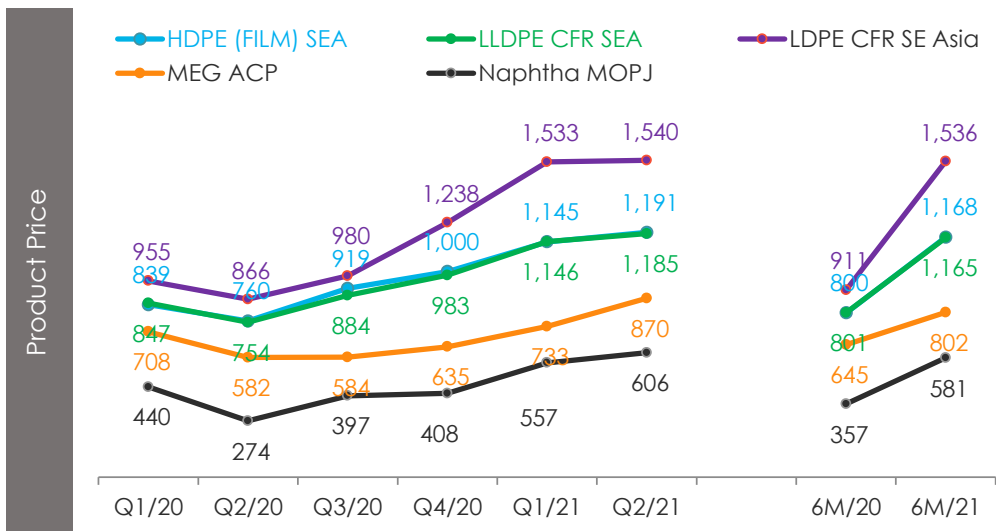
Products to Feed Margin (USD/Ton BTX)



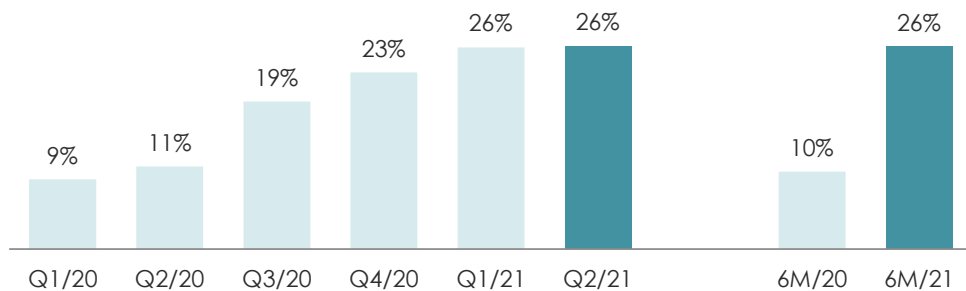
Olefins and Derivatives Performance



Olefins Prices and Spread (USD/Ton)



Olefins Adjusted EBITDA Margin*



Olefins U-Rate (%)

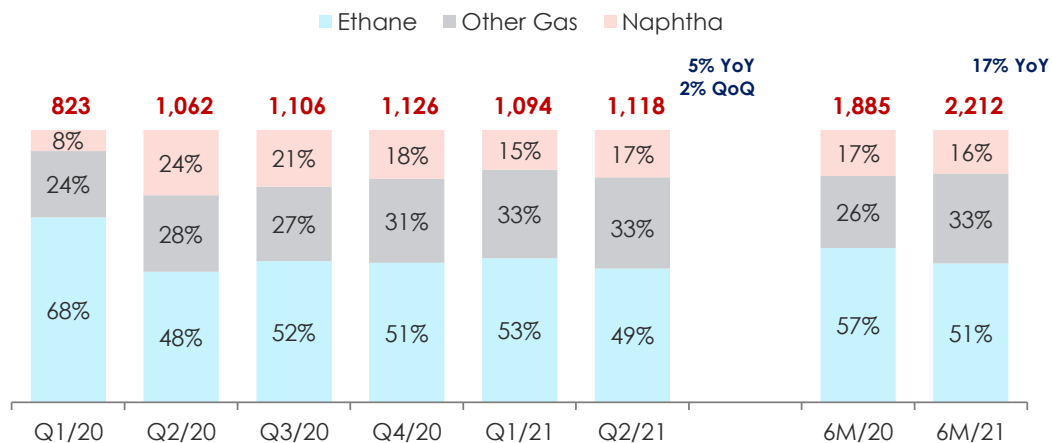
| | Q1/20 | Q2/20 | Q3/20 | Q4/20 | Q1/21 | Q2/21 | 6M/20 | 6M/21 |
|-----------------|------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
| Olefins | 81% | 100% | 103% | 104% | 104% | 93% | 91% | 98% |
| HDPE | 97% | 103% | 111% | 110% | 107% | 107% | 100% | 107% |
| LLDPE | 88% | 92% | 94% | 113% | 96% | 106% | 90% | 101% |
| LDPE | 69% | 122% | 110% | 102% | 123% | 100% | 95% | 111% |
| Total PE | 89% | 102% | 104% | 110% | 105% | 105% | 95% | 105% |
| MEG | 97% | 97% | 96% | 91% | 105% | 104% | 97% | 104% |

Note *Excluded effect of PTA and PET

Olefins and Derivatives Performance

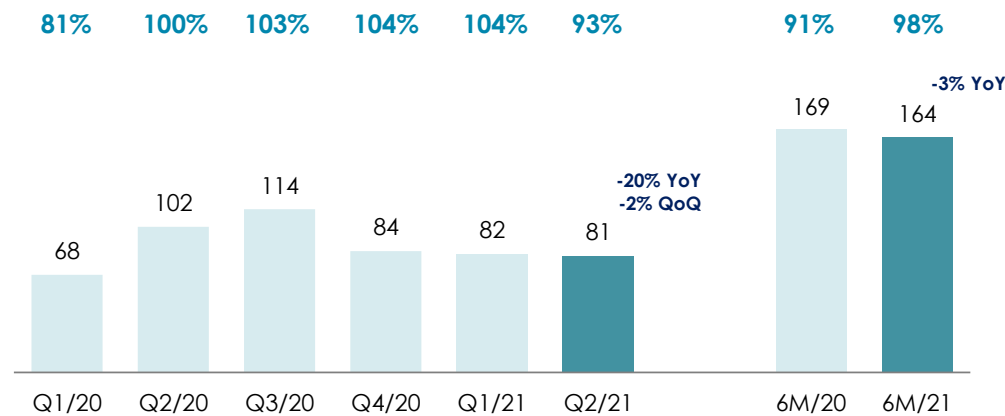


Olefins Intake (Ktons)



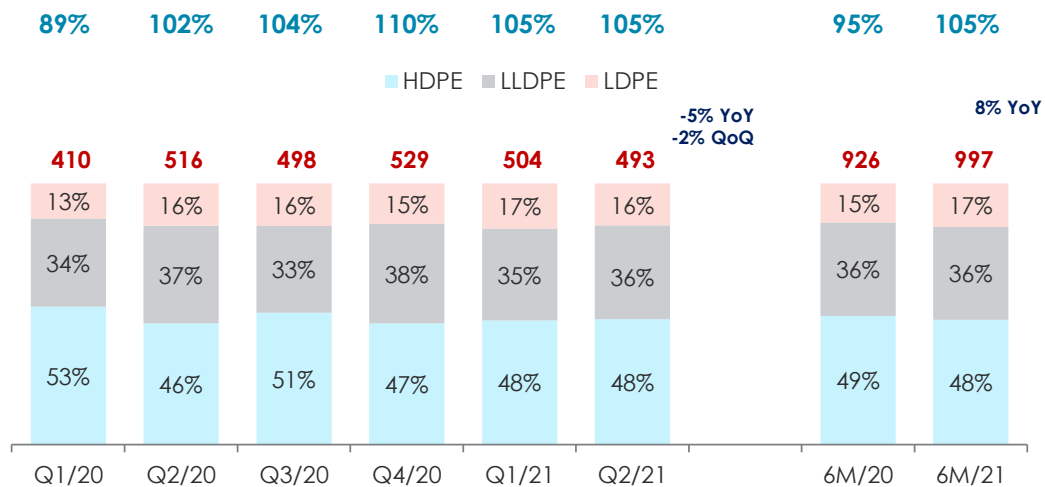
Olefins Sales Volume (Ktons)

Olefins U-Rate



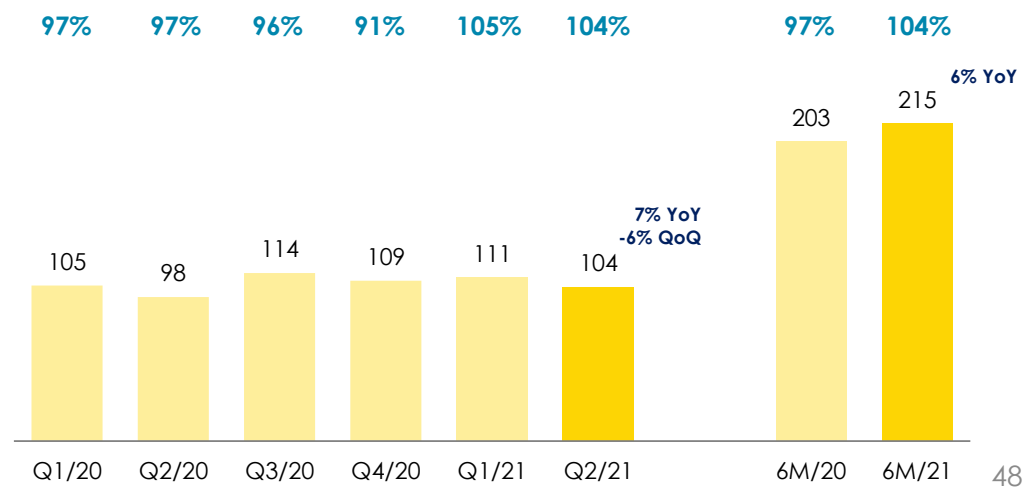
PE Sales Volume (Ktons)

PE U-Rate



MEG Sales Volume (Ktons)

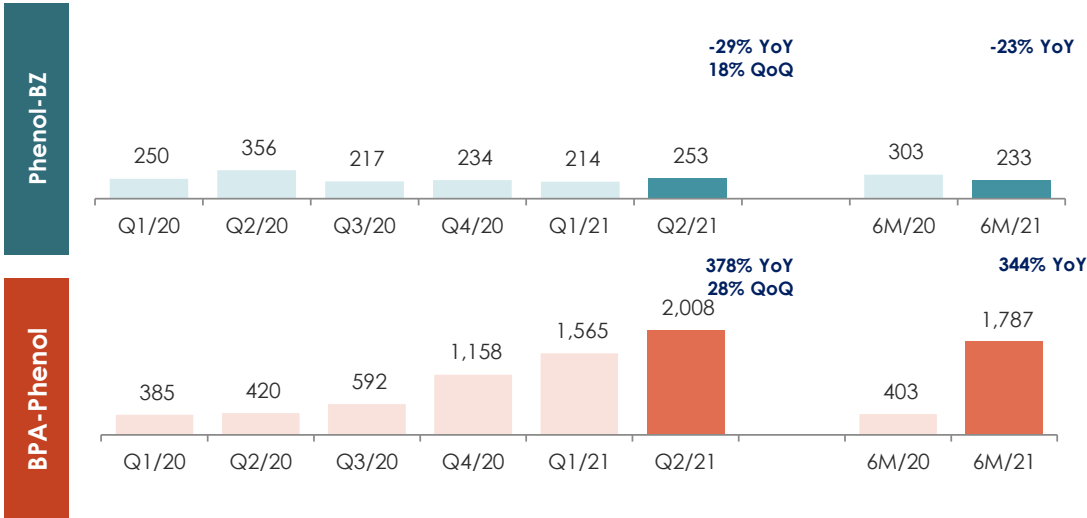
MEG U-Rate



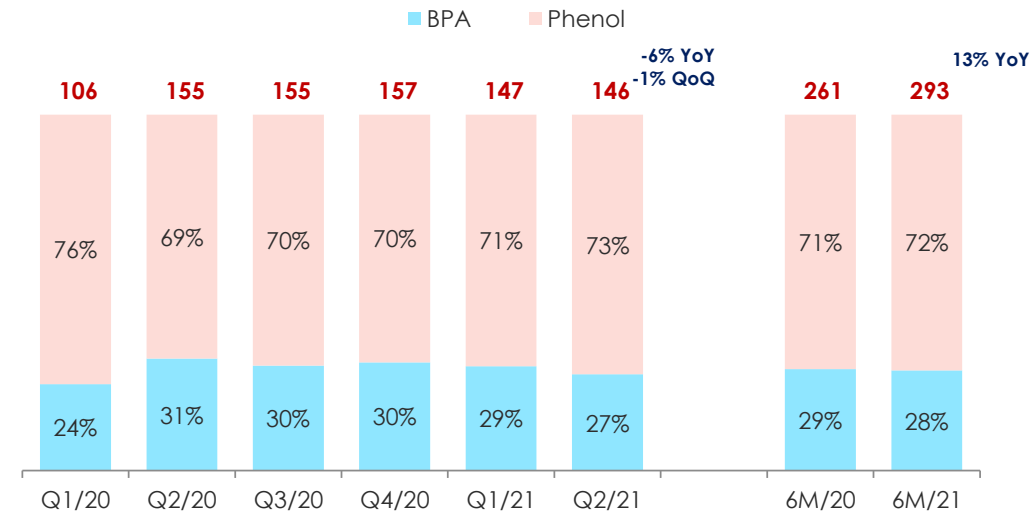
Phenol Performance



Phenol/ BPA Prices and Spread (USD/Ton)



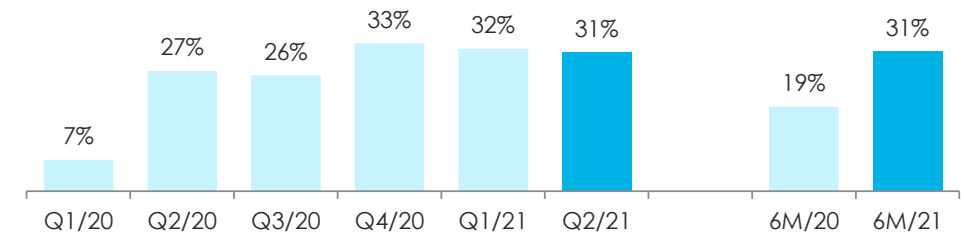
Phenol Sales Volume (Ktons)



Phenol U-Rate

| U-Rate | Q1/20 | Q2/20 | Q3/20 | Q4/20 | Q1/21 | Q2/21 | 6M/20 | 6M/21 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| Phenol | 83% | 117% | 119% | 119% | 119% | 115% | 100% | 117% |
| BPA | 83% | 120% | 116% | 114% | 114% | 103% | 101% | 109% |

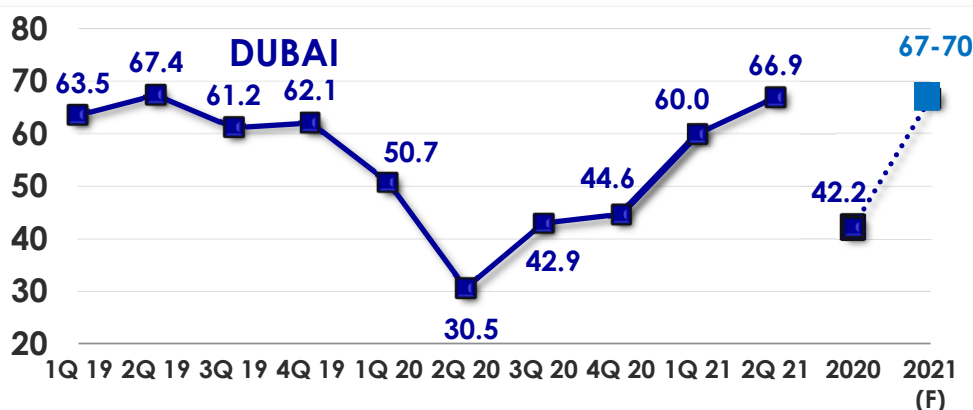
Phenol Adjusted EBITDA Margin



Though challenges from Delta variant coupled with increased OPEC+ supplies in August, strong fundamentals from the West support oil price with oil demand growth in 2H/21 back to almost pre-covid level



Crude Price, \$/bbl

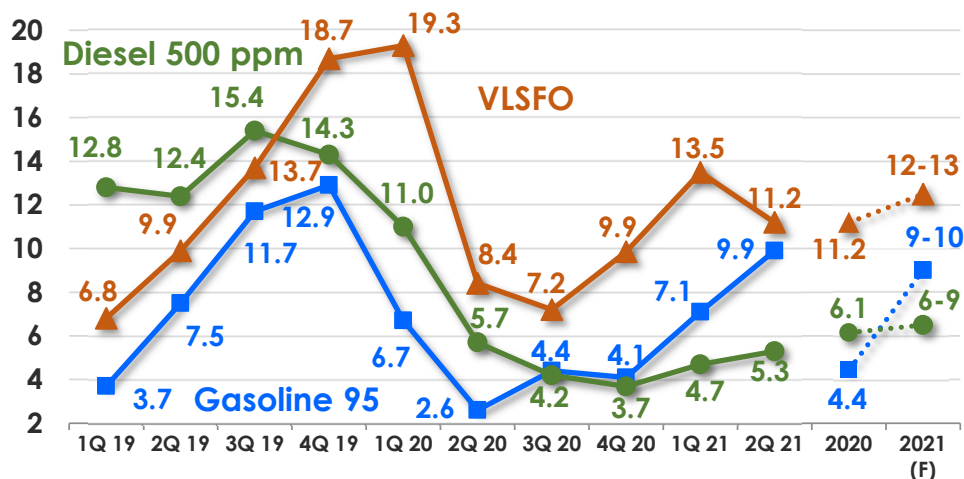


Market Commentary : Crude & Refinery

Crude

- EU & US expect vaccine progress 75% in Q3/21 with easing lockdown restrictions while Delta variant outbreaks in Asia limit demand recovery
- OPEC+ supplies increase from Aug 2021-Sep 2022 bringing back ~10 MBD production cut from May 2020 when oil demand & prices crashed as Covid lockdowns hit last year
- U.S. production resume slowly; expects to see high increase in Q4/21, while return of Iran crude supply is delayed

Refined Products Price, \$/bbl



Diesel & Gasoline

- More vaccinations around the world, relaxing lockdown policy help stimulate transportation demands. However, closely monitor COVID new variants impact
- Product imbalance after low international commercial flight demand; Jet is dumped into Diesel pool
- New Asia integrated refinery start up in 2021, with combined capacity 0.8 MBD, pressure product cracks

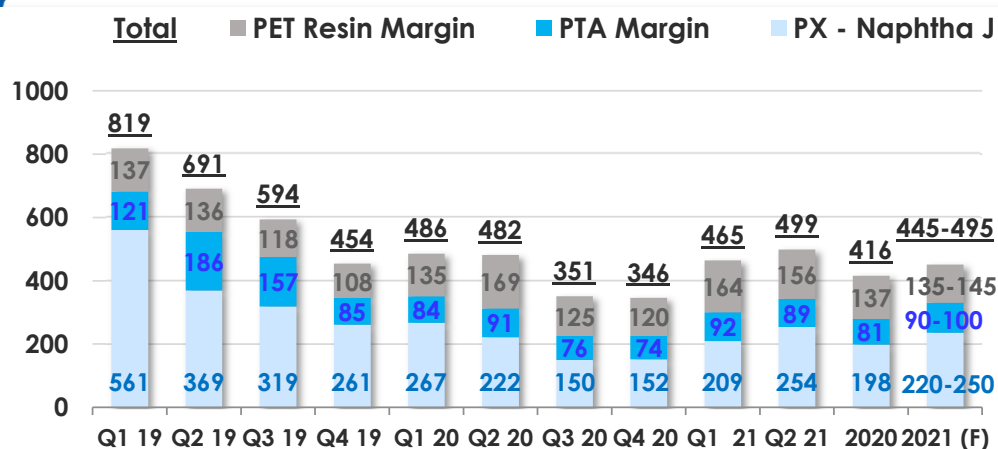
VLSFO

- Recover shipping activities to Pre-COVID level due to limited air freight transportation during restriction policy
- Low China import due to new tax rebate policy

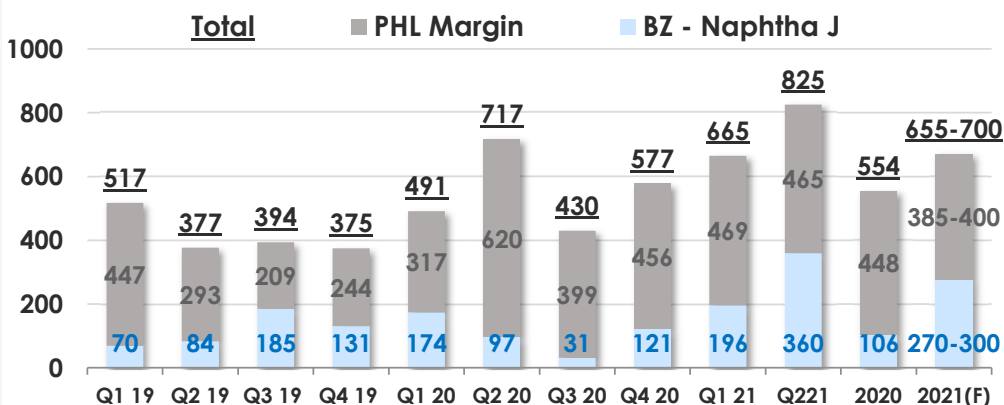
- Supply loss from several plants unplanned S/D, new capacity delay start up [Zhejiang] support Q2/21
- New capacities addition in 2H/21 will pressure Aromatics market



Paraxylene Value Chain Spreads, \$/T



Benzene Value Chain Spreads, \$/T



Market Commentary : Aromatics

PX

- Supply loss from several plants unplanned S/D & new capacity delay start up [Zhejiang] support Q2/21 PX market
- PX new capacities 5 MMT in 2H/21 will pressure PX market

PTA

- 2021 PTA new capacities in China ~10 MMT (mostly non-integrate to PX) will support PX demand in short term but pressure PTA margins

PET

- PET Resins still have support from hygienic single-use, food/healthcare packaging, and water bottle sectors

BZ

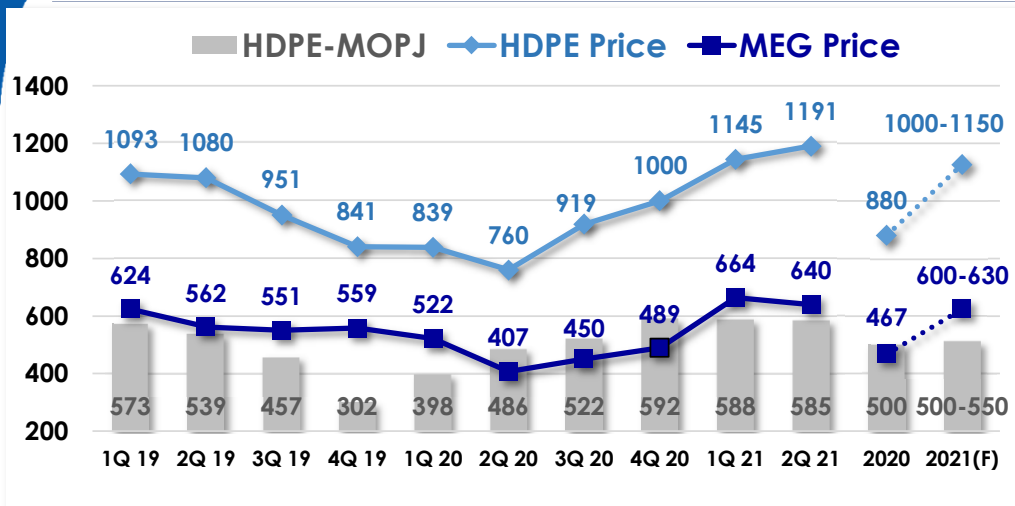
- Supply loss from several plants unplanned S/D, new capacity delay start up [Zhejiang] & low China inventory support Q2/21 BZ market
- 2021 SM new capacities in China ~2.3 MMT (mostly non-integrate to BZ) will support BZ demand in short term but pressure SM margins
- Work from home, learn online & COVID concern still support food packing, electronics appliance & medical sectors

Phenol

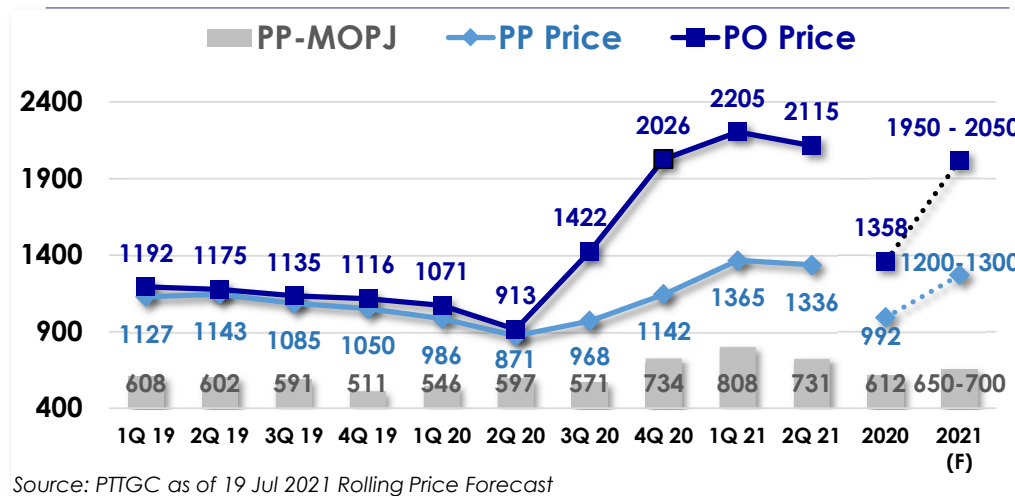
- Supply loss in NEA, US & turnaround season support Q2/21 Phenol market with good end products demand in construction & household
- Phenol new capacities in China ~0.5 MMT hanging from 2020 still effect phenol margins in 2021

- High feedstock costs push up price in Olefins market with pressure
- Upcoming of new capacities and pandemic situation lead to a challenge in Olefins market

Ethylene & Derivatives Price, \$/T



Propylene & Derivatives Price, \$/T



Market Commentary : Olefins

PE

- **Firmer upstream prices** leading to support the market in 2H2021
- **Additional supply in Asia** ~6 MTA or 5% of global capacity from cracker capacity expansions will pressure in 2H2021
- **Risen freight cost & container shortages issue still exist through 2H2021** putting pressure on PE producers and finished goods exporters

MEG

- **MEG demand** supported by **high summer seasonality of Polyester** in 2Q2021
- **Recovery in US supply & new large scale MEG capacities** ~2 MTA pressure market sentiment in 2Q2021
- **MEG additional capacities** ~2 MTA or 4% of global capacity target to come on stream in 2H2021

PP

- ~3.5 MTA of capacity addition **will start up in 2H2021**; 3% of global capacity
- **The resurgence of COVID in SEA** dampen market sentiment in 3Q2021
- **Demand may get a boost from home appliances & packaging in 2H2021** amid the global vaccine rollout

PO

- **Global PO demand recovery** from **end products demand in household/automotive cushions, construction insulation, cold shield fridge & coating packaging** but pressure by challenged Polyols margin due to high new capacity this year
- 2H2021 **upcoming new PO & Polyols capacity** ~350 KTA & ~135 KTA; 3% & 1% of global capacity. However, **some plants may delay to early 2022**