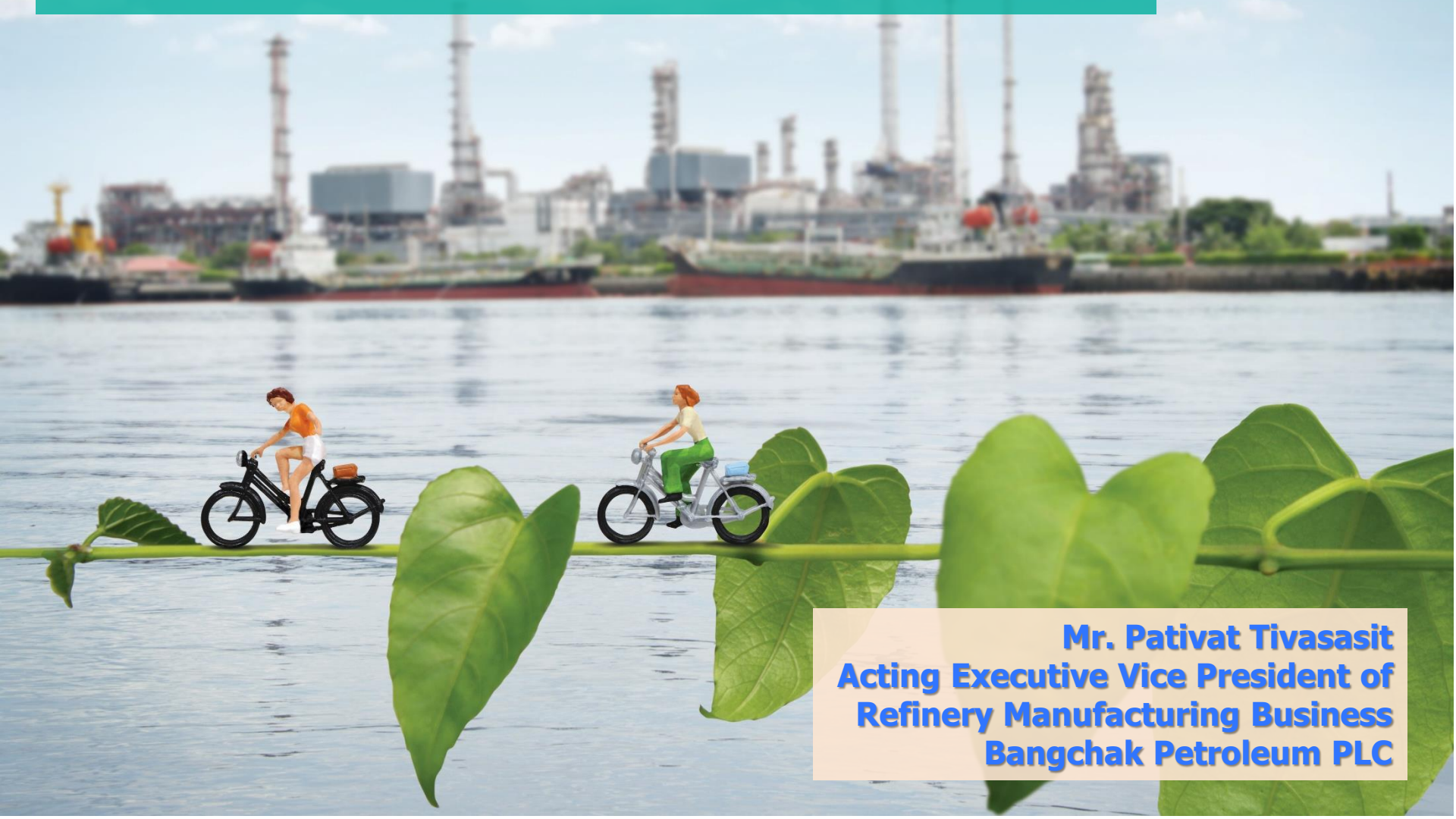
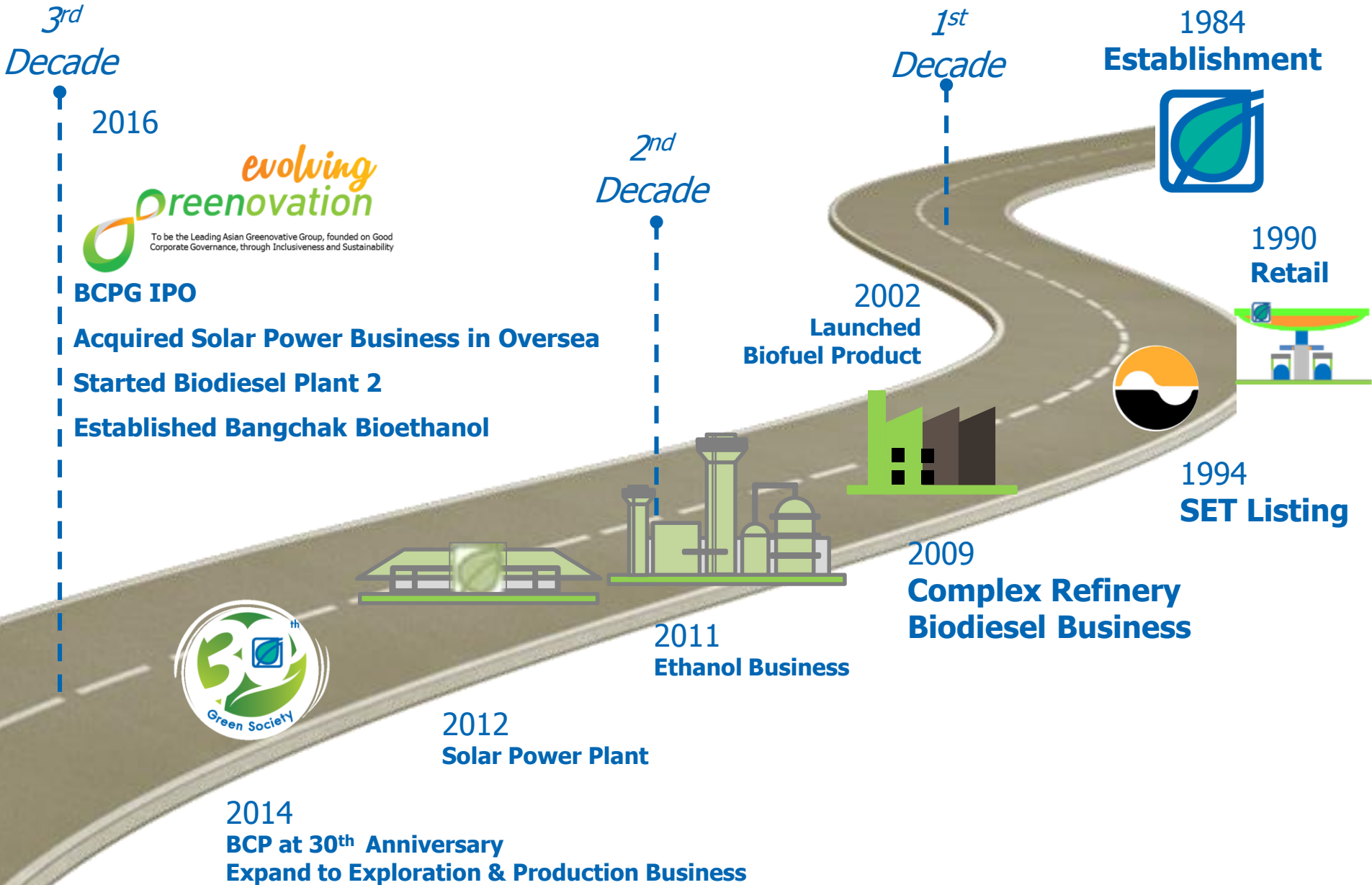


**The Bangchak Petroleum PLC for  
Transform Technical Challenges Into New Opportunities**  
Japan Cooperation Center, Petroleum (JCCP)  
26 Jan 2017



**Mr. Pativat Tivasasit**  
**Acting Executive Vice President of**  
**Refinery Manufacturing Business**  
**Bangchak Petroleum PLC**

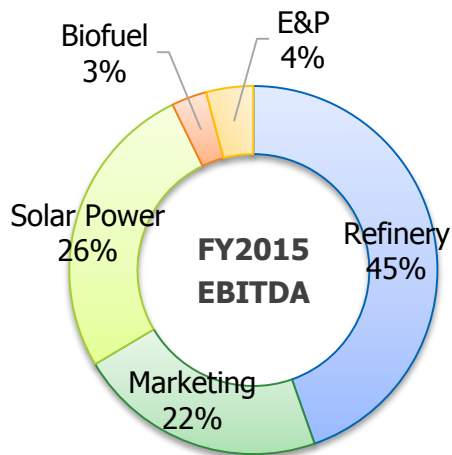
# Path of Success



# Diversified Portfolio: A balance earnings engines



## Business Structure in terms of EBITDA



### Core Engines



**Refinery**



**Marketing and Retail**



**Green Power**

#### Synchronization of benefit

Fully integrated model optimizing profit through business cycle

#### Stable earnings stream

Green Power Plant has a high visibility stream of cash flow

### New Engines



**Biofuel**

**Secure feedstock and capturing biofuel demand**



**E&P**

**Adapt for long-term competitiveness**  
Rationalized assets and Cost control



**New Business**

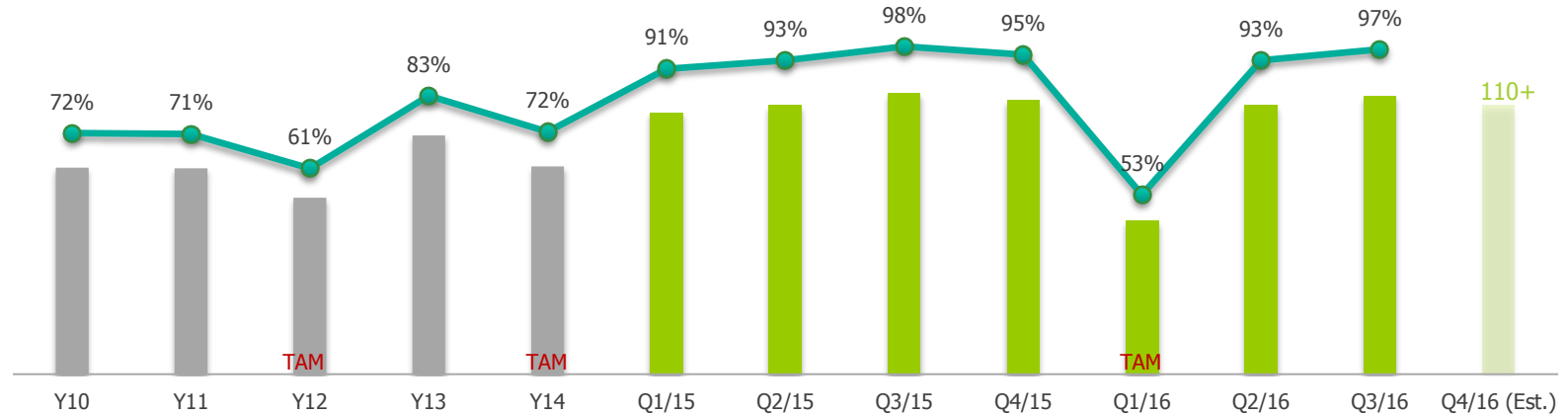
**Broaden Opportunities in Regional and Global Context**

# Core Engines : Refinery Business: Stable and high crude run



## Production Profile

Actual Crude Run Unit: KBD



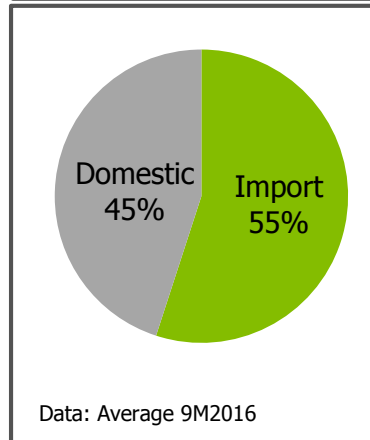
TAM = Turnaround Maintenance Period

## BCP Refinery Characteristic

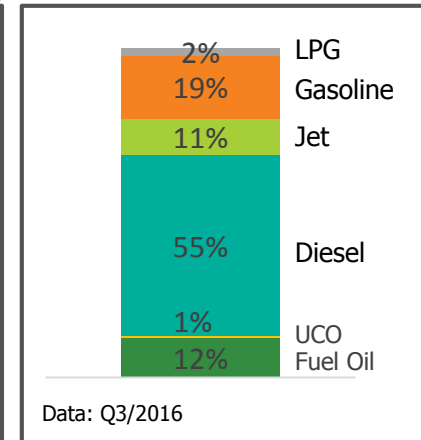
- ◆ **Complex Refinery**
- ◆ **Nameplate Capacity:** 120 KBD
- ◆ **Preferred crude :** Sweet Crude
- ◆ **Crude Source :** Domestic and Regional

Optimize more than 20 different crude sources

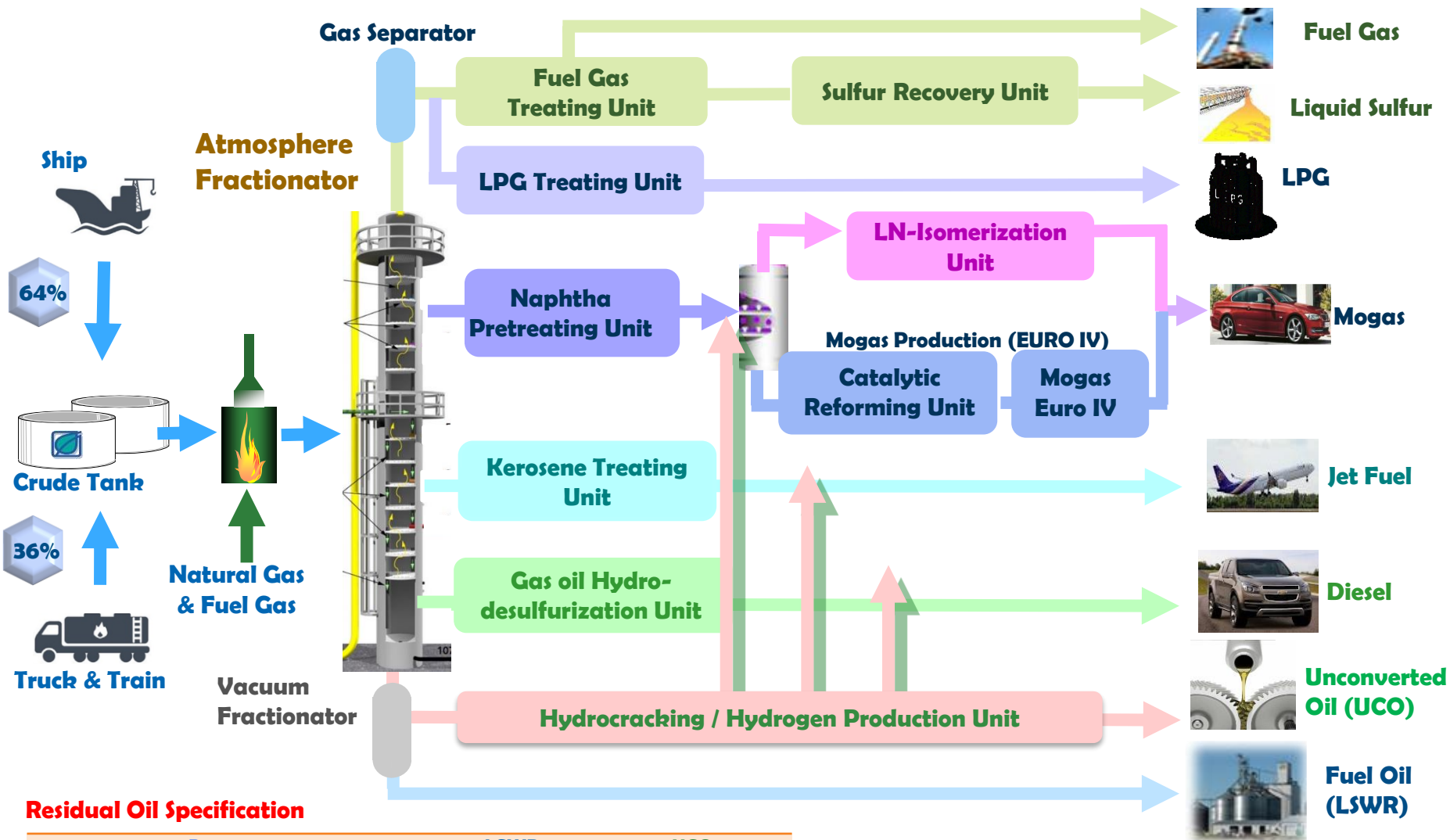
### Crude Sourcing



### Product Yield



# Core Engines : Refinery Business: Bangchak Refinery Process






## Residual Oil Specification

| Property                         | LSWR     | UCO       |
|----------------------------------|----------|-----------|
| Kinematic Viscosity (@ 100 degC) | 50 max   | 3.5 – 5.0 |
| Normalized VI @ 4.3 cSt          | -        | 135 min   |
| Sulfur (ppm)                     | 3000 max | 20 max    |
| Nitrogen (ppm)                   | -        | 3.0 max   |
| 5% Distillation                  | -        | 350 min   |

# Core Engines : Refinery Business: 3E (Efficiency, Energy, Environment Improvement) Project



| Project Timeline  |   | Y2016 | Y2017             | Y2018                       | Y2019             | Y2020             |
|---|---|-------|-------------------|-----------------------------|-------------------|-------------------|
|  | <b>New Co-Gen Power Plant (≈12 MW)</b><br>➤ Under Construction  |       | <b>Completion</b> |                             |                   |                   |
|  | <b>Continuous Catalyst Regeneration Unit (CCR)</b><br>(Extend Maintenance Cycle)<br>➤ FEED&ITB Preparation for Enlarge Capacity |       | ➤ EPC Award       |                             | <b>Completion</b> |                   |
|  | <b>Debottlenecking</b><br>(For light end products)<br>➤ Basic Design Preparation  |       |                   | ➤ EPC Award<br>NPU and ISOU |                   | <b>Completion</b> |

## Brief Project Detail 3E Project

- ❖ Refining capacity upgrading
- ❖ Cost saving on energy consumption
- ❖ Debottlenecking for higher crude run
- ❖ Enhancing product yield

## Benefits

- ❖ Improving product value
- ❖ Saving cost and energy
- ❖ Reducing emission

## New Co-Gen Power Plant



Overall Site



Boiler Stack/ Structure

**Core Engines :**  
**Marketing and Retail: Strong and Fully Equipped Retail Networks**



“ Expand to Match with  
Increase Refinery Production ”

Target in FY2016

**+60** NEW  
Service  
Stations

**+300**

Stations  
in FY2020



Distinguishable Market Position: **Renewable Energy Leader and Provider**

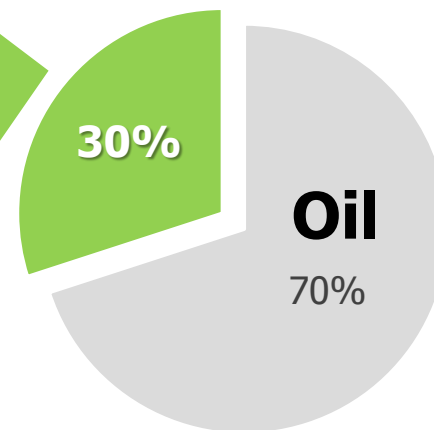


# Growing Non-Oil Portfolio



Non-Oil EBITDA Contribution from 6% to

Marketing EBITDA Portion



FY2020



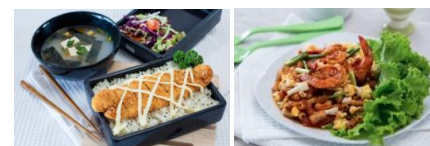
## Convenience Store



## Premium Coffee



## Fresh Cooking Food



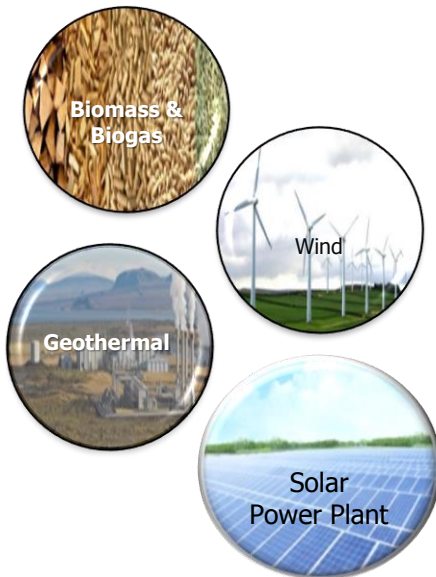




# BCPG

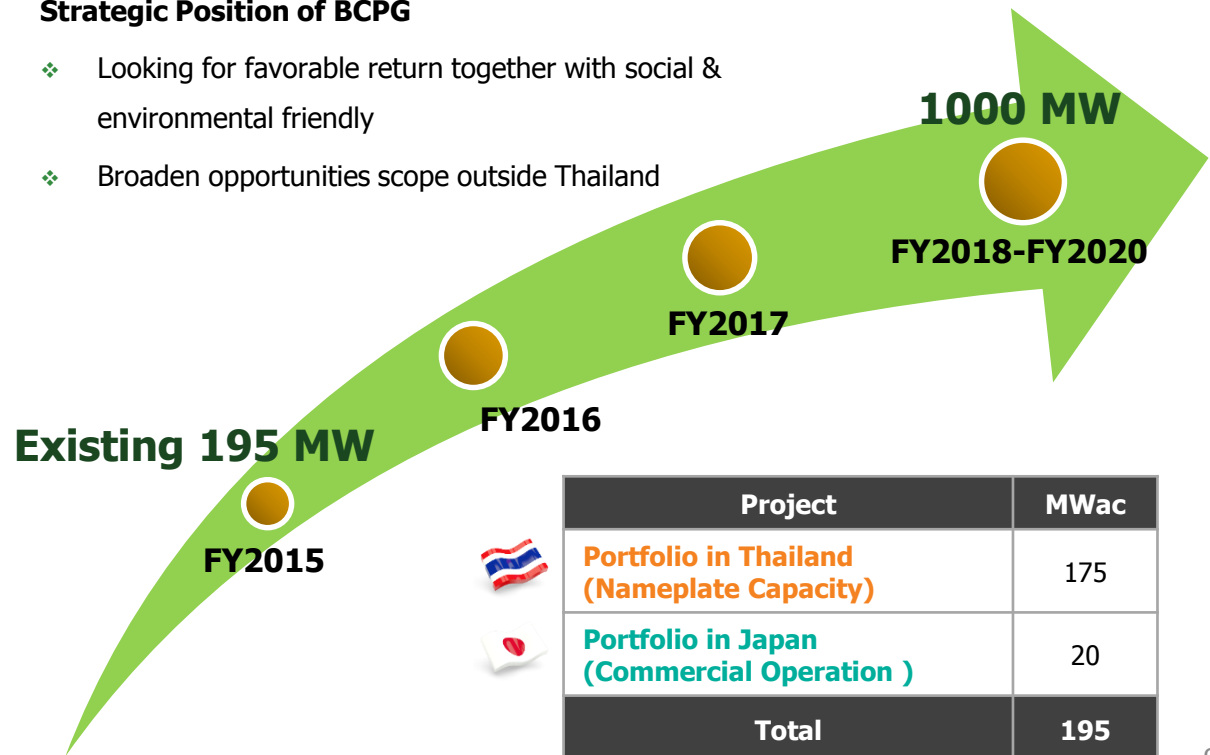
## Green Power Plant



### “ Green Power Plant Portfolio ”



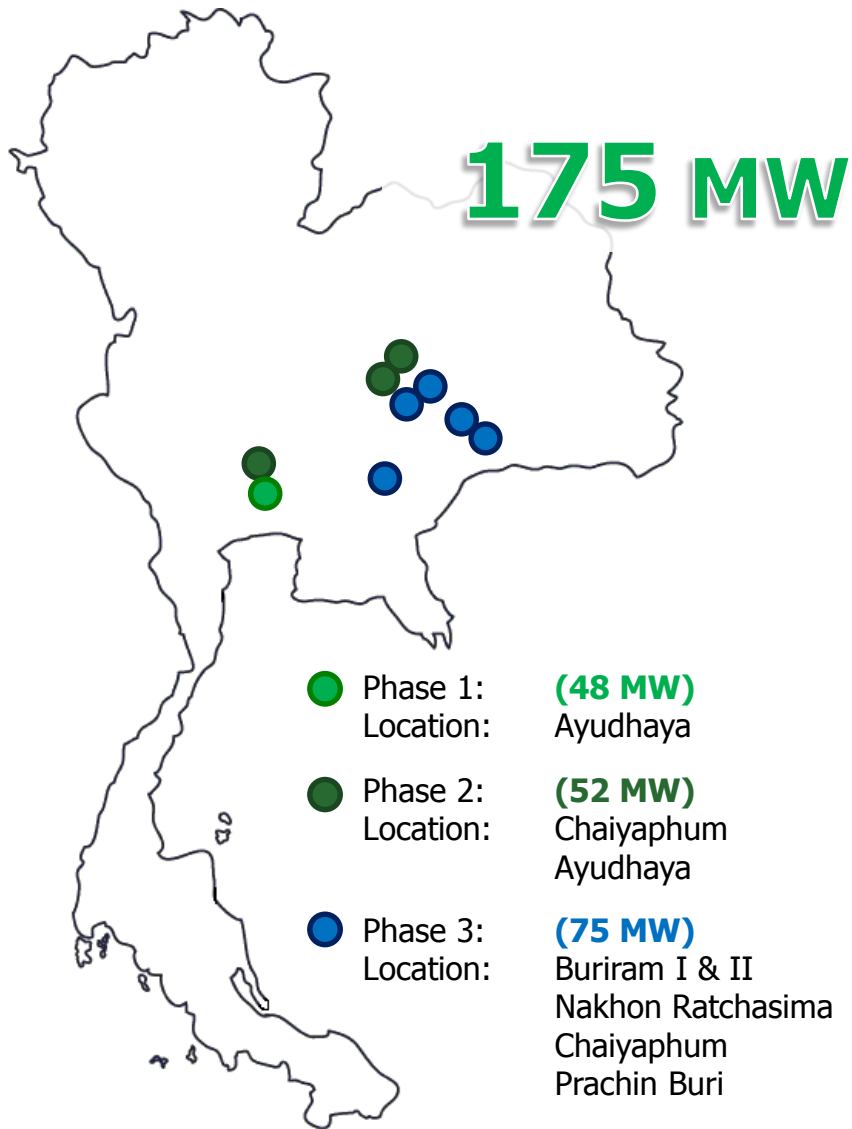
#### Strategic Position of BCPG

- ❖ Looking for favorable return together with social & environmental friendly
- ❖ Broaden opportunities scope outside Thailand



| Project  | MWac       |
|--|------------|
|  Portfolio in Thailand (Nameplate Capacity) | 175        |
|  Portfolio in Japan (Commercial Operation ) | 20         |
| <b>Total</b>   | <b>195</b> |

# Core Engines : BCPG Green Power Plant: Investment Stories



- **Solar Power Plant Operator 118 MW PPA granted by EGAT and PEA.**
- **Granted adder THB 8/kWh on top of normal tariff rate for 10 years.**
- **BOI tax privilege** to exempt corporate income tax for 8 years and 50% for 5 years afterwards.

| Project                  | Nameplate Capacity (MW) | PPA (MW)   |
|--------------------------|-------------------------|------------|
| Phase 1 (Year 2011-2012) | 48                      | 38         |
| Phase 2 (Year 2012-2013) | 52                      | 32         |
| Phase 3 (Year 2013-2014) | 75                      | 48         |
| <b>Total</b>             | <b>175</b>              | <b>118</b> |

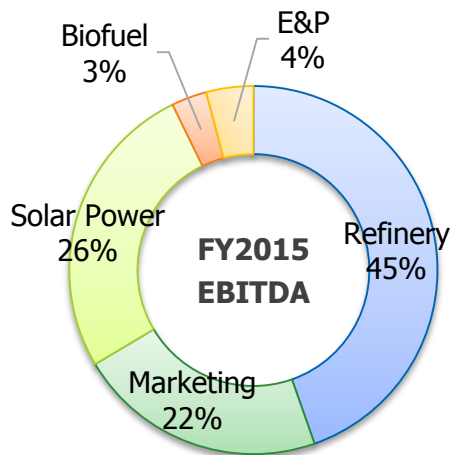
# Core Engines : BCPG Green Power Plant: Investment Stories



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**New Business**

**Broaden Opportunities in Regional and Global Context**

# New Engines : Biofuel: Biodiesel Business



## Biodiesel Business

### Bangchak Biofuel (BBF)

**Subsidiaries Company**  
*holding 70% of total share outstanding*

**Production Capacity**      **360,000**      litre/day



### Biodiesel Expansion:

❖ **Expansion Capacity:**

**+450,000**      litre/day

- ❖ **Start Commercial Sales in July 2016**
- ❖ **Investment Cost: ≈1,800 THB Million**
- ❖ **Mainly supplied to BCP**



# New Engines : Biofuel: Bioethanol business



## Ethanol Business

### Ubon Bio Ethanol

**Affiliates Company**  
holding 21.28% of total share outstanding

**Production Capacity** **400,000** litre/day



### Supply Acquisition:

Bangchak Bioethanol

❖ **New Capacity:**

**+150,000** litre/day

❖ **Commercial operated September 2016**

❖ **Investment Cost: ≈765 THB Million**

Molasses



Cassava

# Overall Geographical Expansion



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