

FY2017 Seminar on the Joint Crediting Mechanism (JCM)  
Project Implementation in Indonesia

# Energy Saving by Optimum Operation at an Oil Refinery

**Yokogawa Electric Corporation**

# Project Location

**Partner company** : PT PERTAMINA (Persero)

**Target Site** : Refinery Unit V (Balikpapan)

**Target equipment** : HPU\* & HCU\*\*



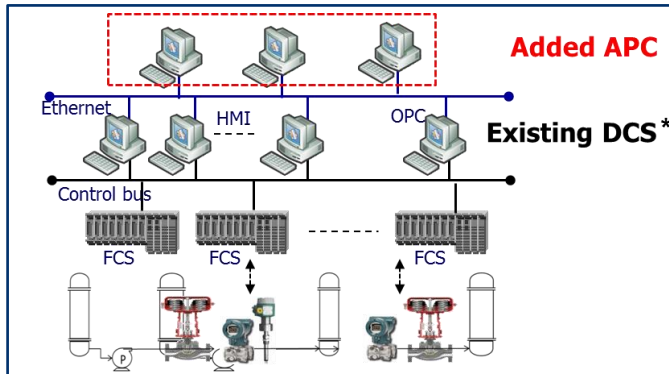
**Refinery Unit V (View from Blue Sky Hotel )**

**\*HPU : Hydrogen Production Unit**

**\*\*HCU: Hydro Cracking Unit**

# Installed Technology

## System Structure:



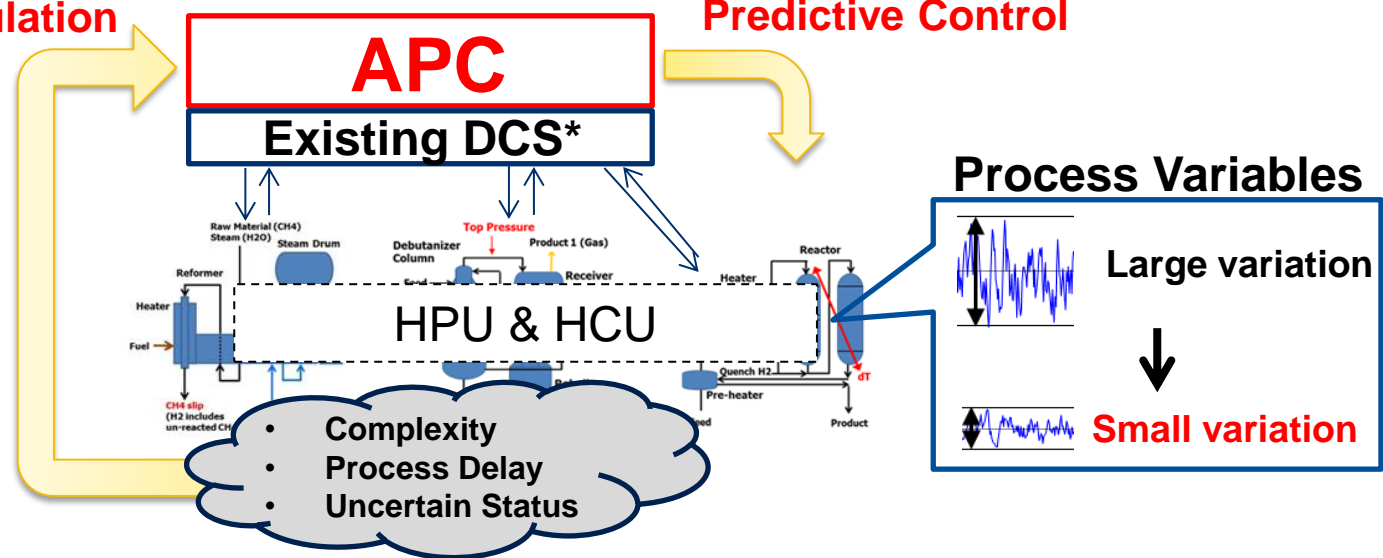
## Advanced Process Control(APC)

- PC Servers (IoT based technology)
- Add-on & Build up
- No process modification

## System Mechanisms:

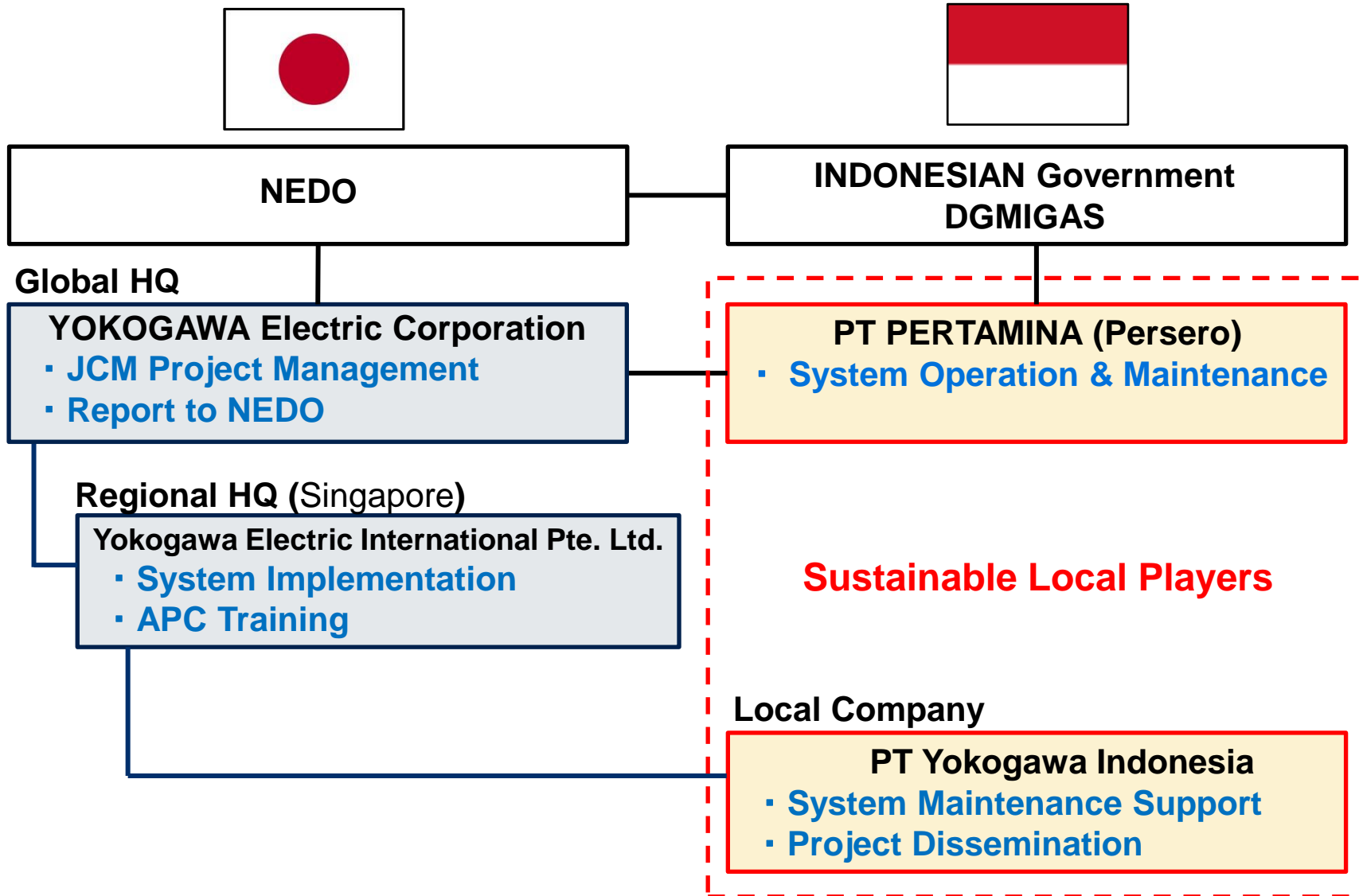
Model based Simulation

Predictive Control

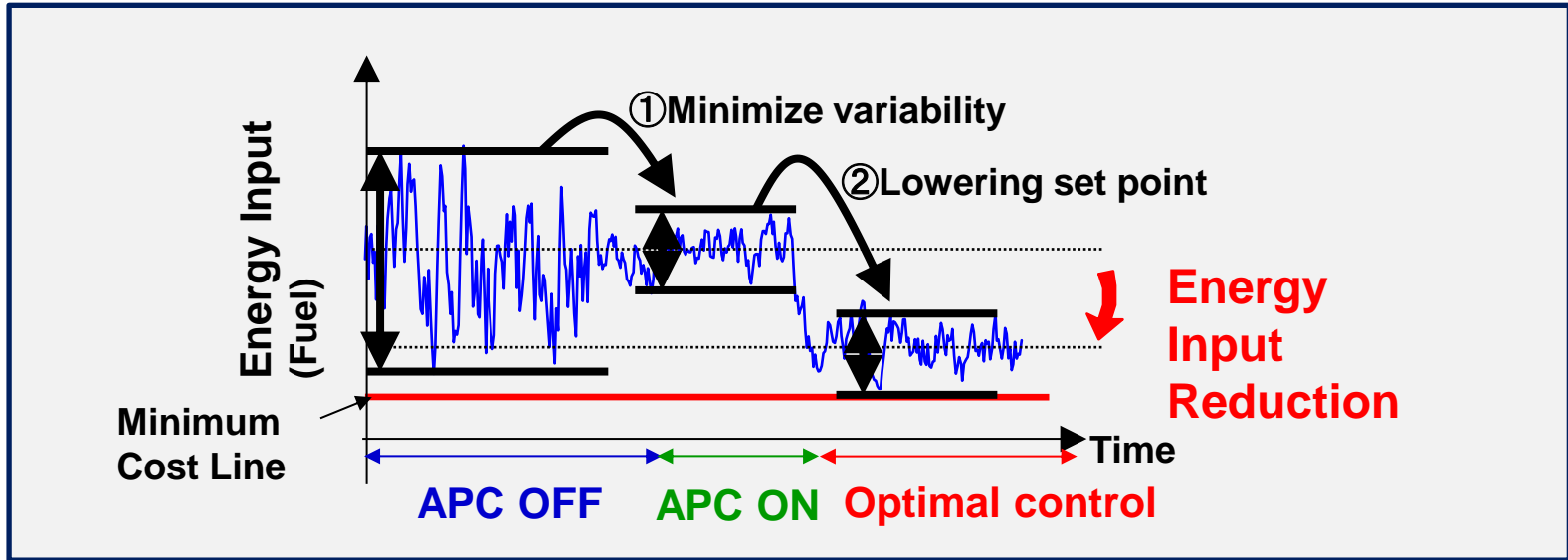






\*DCS: Distributed Control System

# Project Formation



# Solution by Installed Technology



	Before APC	After APC
Key Process Variability	Large Variation	Small Variation
Operational Cost	Need excess Fuel & Feed 	Proper Feed & Fuel 
Economic Efficiency	Not maximum 	Maximum 

# Expected Benefits of the Project

## ■ Environmental contribution

3400 t-CO<sub>2</sub>/year reduction



## ■ Economic contribution

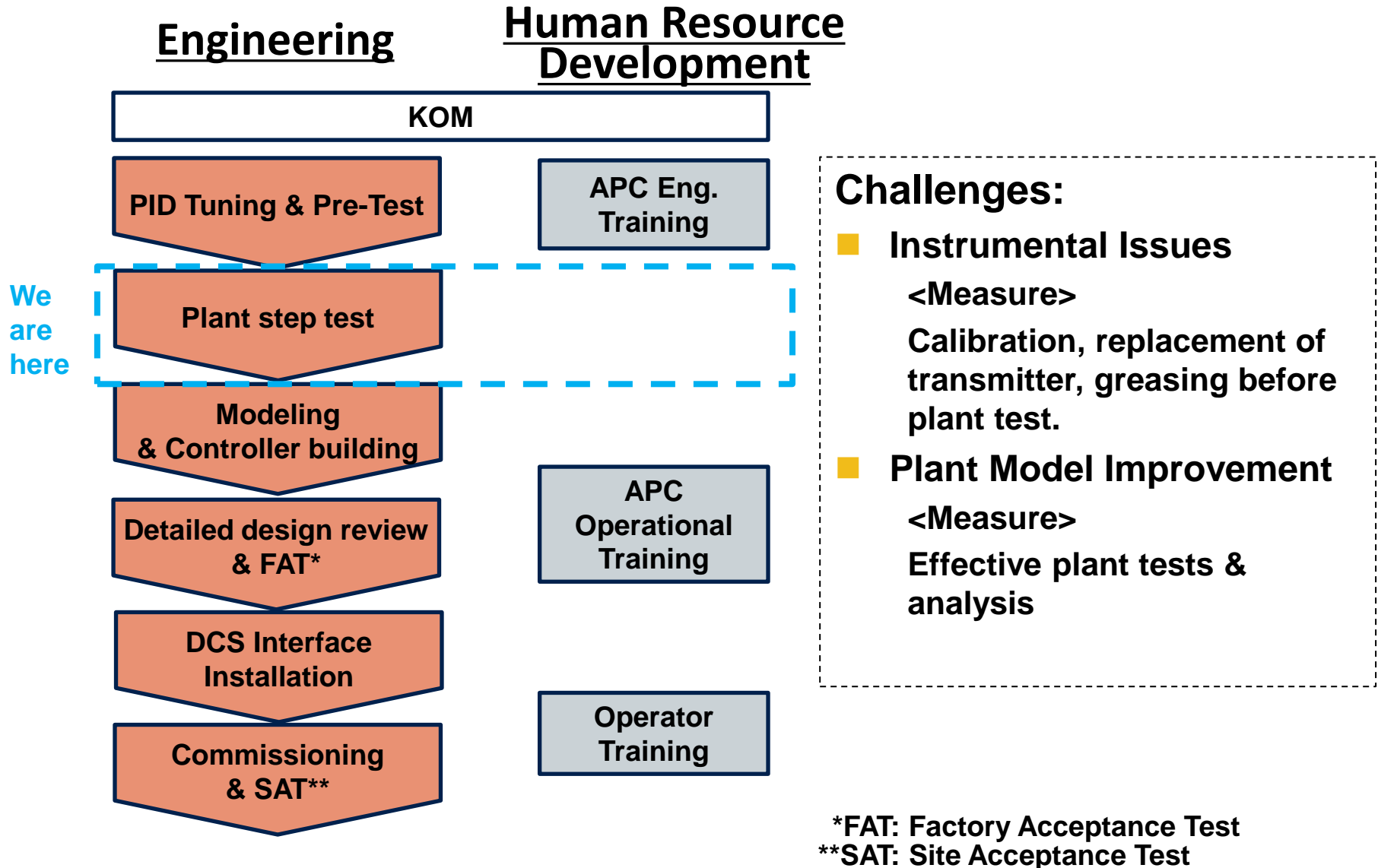
390,000 USD/year saving\*

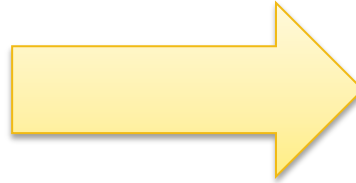
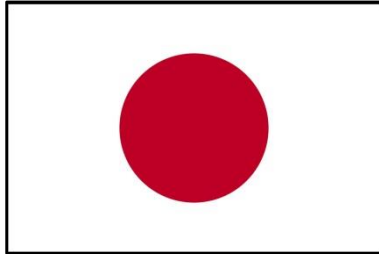


## ■ CSR contribution

\*Fuel Oil CO<sub>2</sub> Conversion Factor : 3.0 t-CO<sub>2</sub>/t  
Fuel Oil Price: 50 USD/bbl

# Project Implementation Current Progress





## ■ System

- ◆ Hardware
- ◆ APC Package Software
- ◆ APC Plant Model

## ■ Technical Knowledge & Skill

- ◆ Knowledge of APC
- ◆ APC Operation Skill
- ◆ APC Maintenance Skill



# Contribution to the Sustainable Development of Indonesia

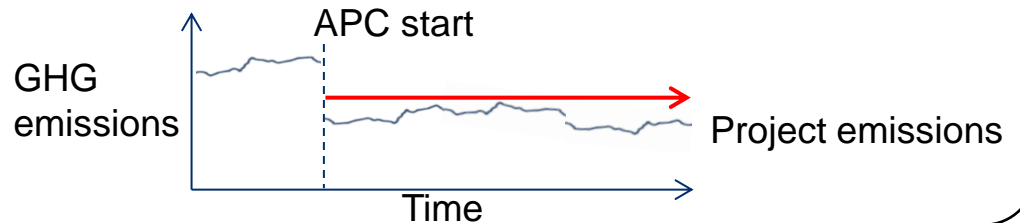
## Expand APC Application Units

Refinery	Petrochemical	Others
CDU	Ethylene	LNG
VDU	LDPE	Ammonia
DCU	HDPE	Methanol
FCC	LLDPE	Nitric Acid
HDS	PTA	Air Separation
CCR	MMA	Waste Water
Alkylation	Butadiene	Cement
HCR	BTX	Power plant
Isomerization	Aromatics	Paper and Pulp
RCCU	Phenol	
HGU	PP	
DHDT	EBSM	
Platformer	MEG	
Gas plants	MTBE	
GOHT	SMPO	
NHT	ABS	
	VCM	

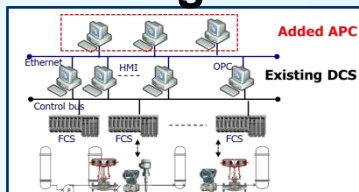
APC Applicable units

# Capacity Building

## Sustainable Performance by Localization



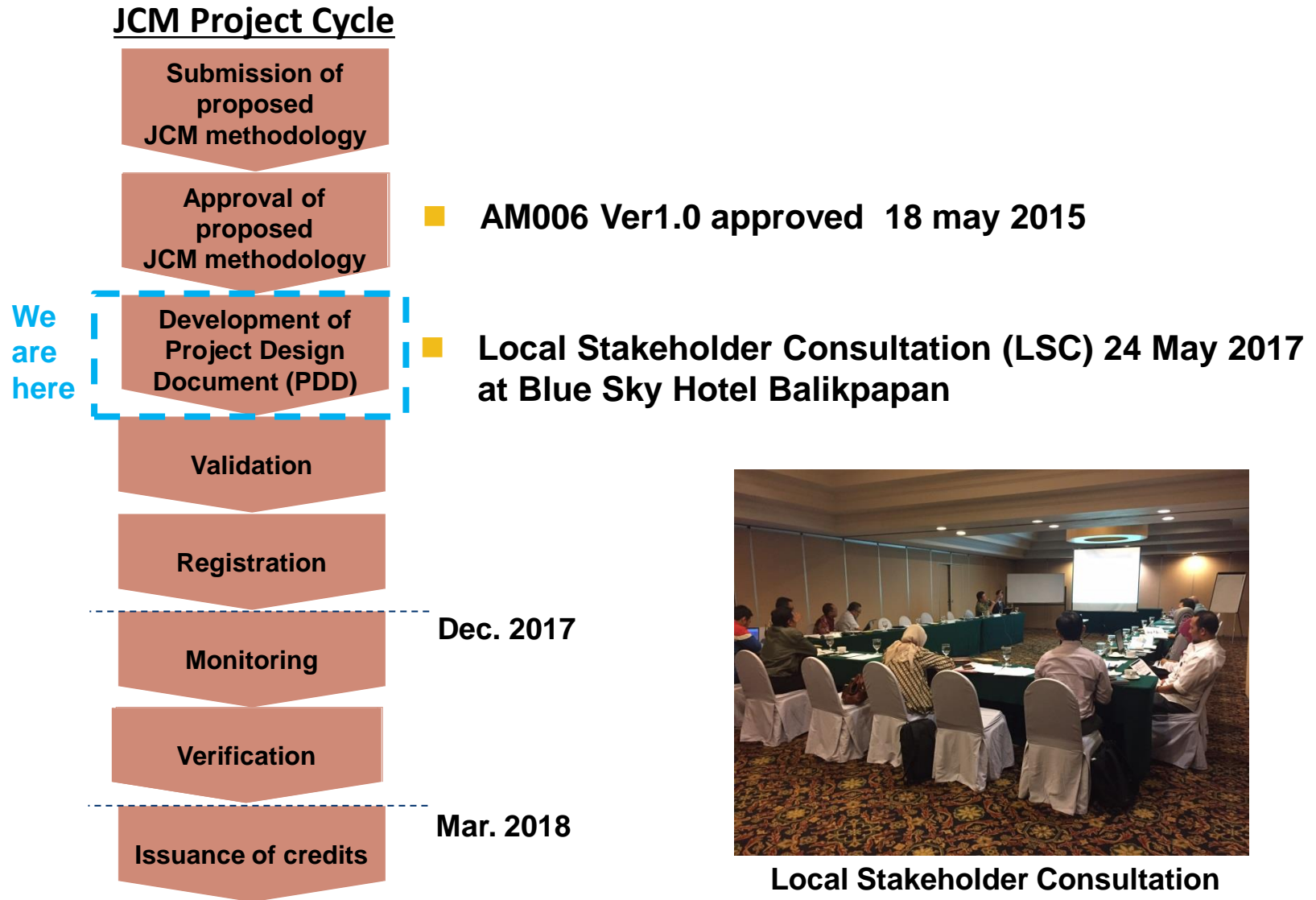
### Starting Point



PT PERTAMINA  
RU-V HPU&HCU

# Sustainability

# Progress of the JCM Project Cycle



# Co-innovating tomorrow™

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