

# IR-DAY2017

## Forest Machine Business

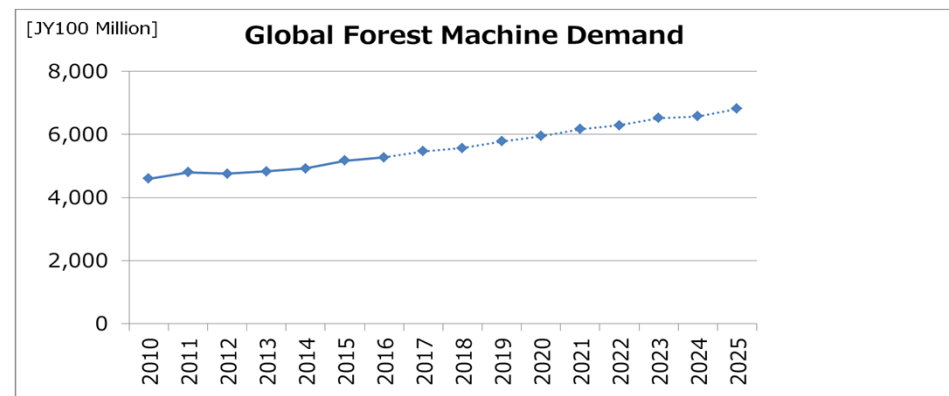
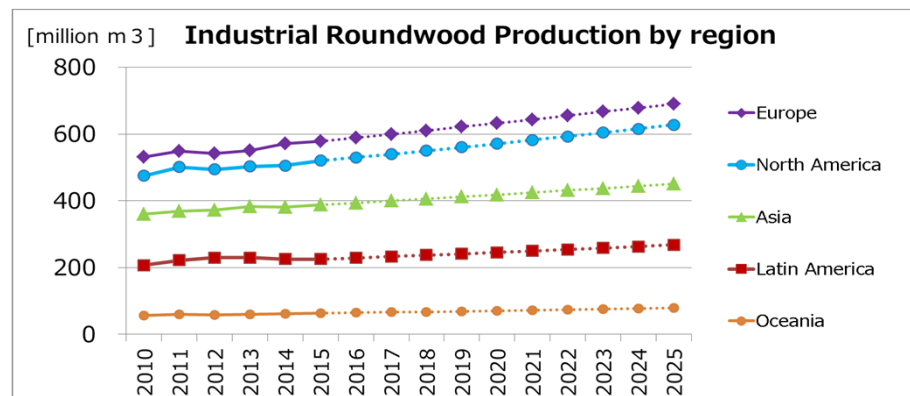
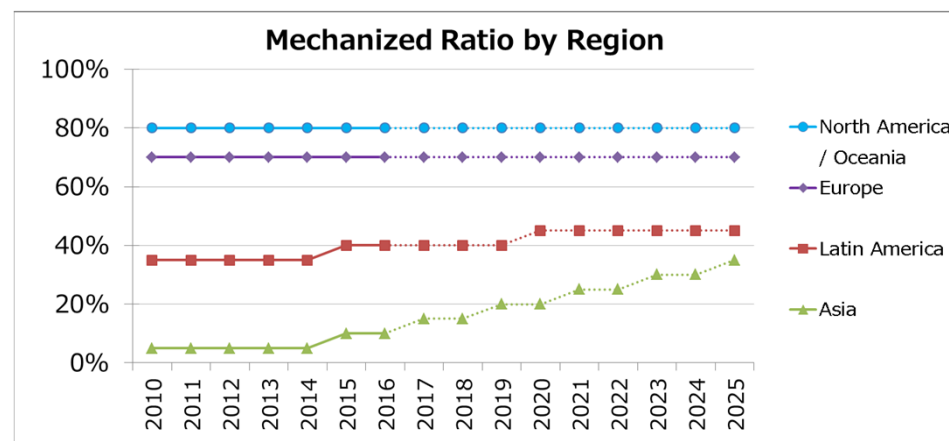
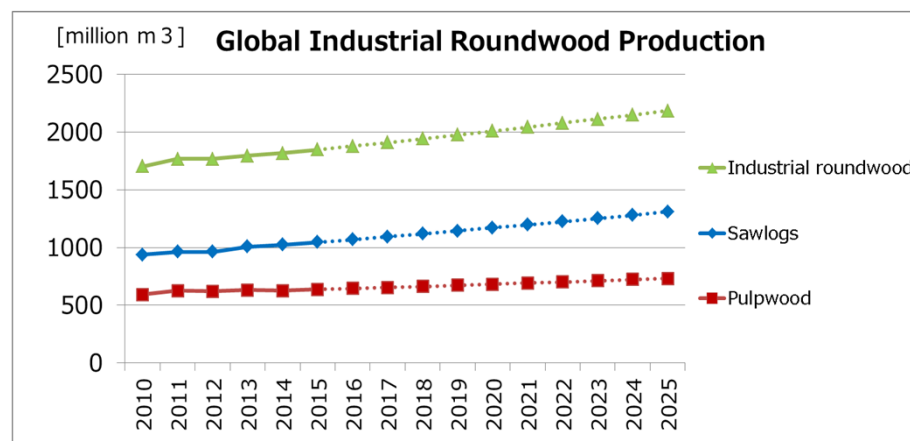
September 15, 2017

Kiyoshi Mizuhara

Senior Executive Officer and  
President, Construction Equipment Marketing Division

- Global production of industrial roundwood = 1,850 mil. tons in 2015. **Will grow 1.7% annually.**  
 Estimation = 2,190 mil. tons in 2025.※1
  - Growth rate by product:
    - Sawlogs & Veneer logs; +2.3% (Global increase in housing starts)
    - Pulpwood; +1.4% (Increase in paper production in developing countries. Developed countries =>decreasing)
  - Growth rate by region:
    - Europe; +1.7%, North America; +1.9%, Asia; +1.5%, Latin America; +1.7%, Oceania; +2.2%
- Forestry mechanization ratio by each region: Europe/NA/Oceania ; stable Asia; increasing
- Forest machine demand = JY 520 B in 2016. will grow 3.3% annually.  
 Estimation = JY 690 B in 2025.※2

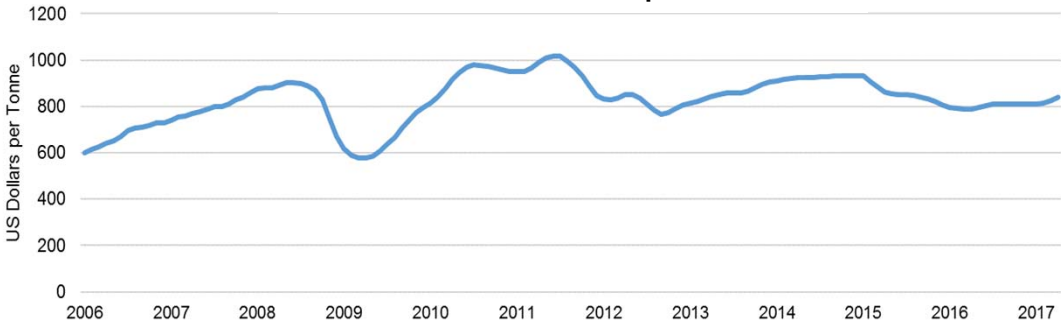
※1 Source: Food and Agriculture Organization of the United Nations (FAO), Komatsu estimate, ※2 Source: Freedonia, Komatsu estimate



# KOMATSU Economic indicators for Forest Machine Market

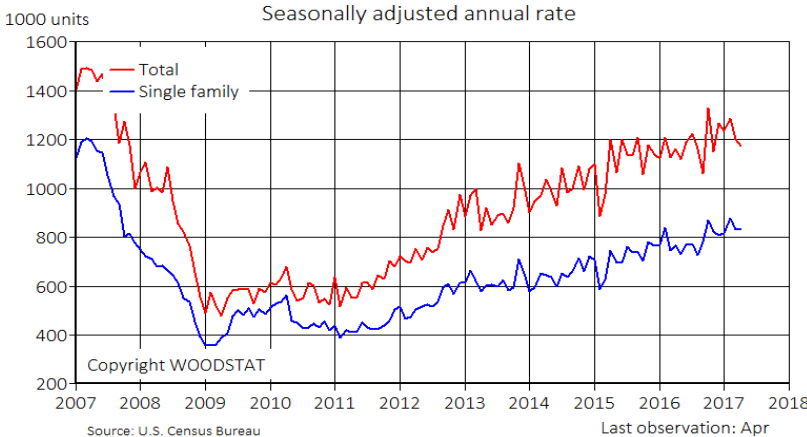
- International pulp price is stable in the past decade except for Lehman aftermath.
  - Consumption increases in emerging countries, decreases in developed countries.
- US housing starts has recovered to pre-Lehman level.

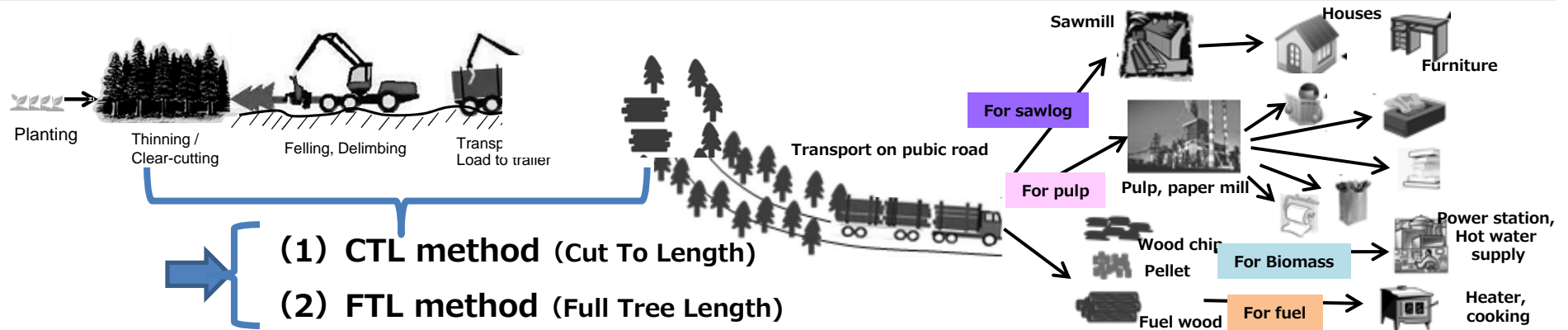
### International Pulp Price



Source: INSEE - National Institute of Statistics and Economic Studies (French national statistics bureau)  
International prices of imported raw materials - Wood pulp (Chicago) - Index NBSK - Price in US dollars per tonne

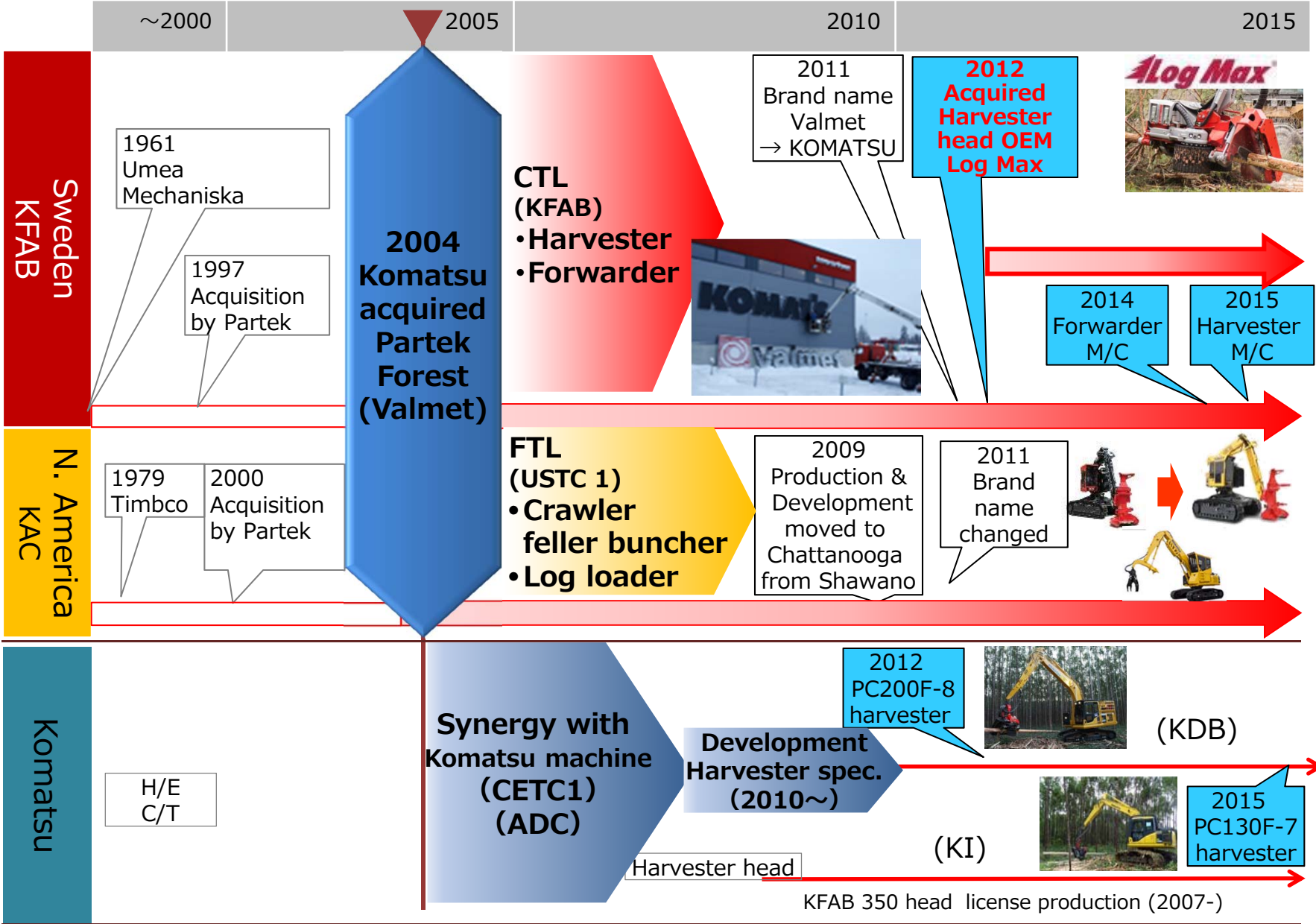
### US Monthly Housing Starts

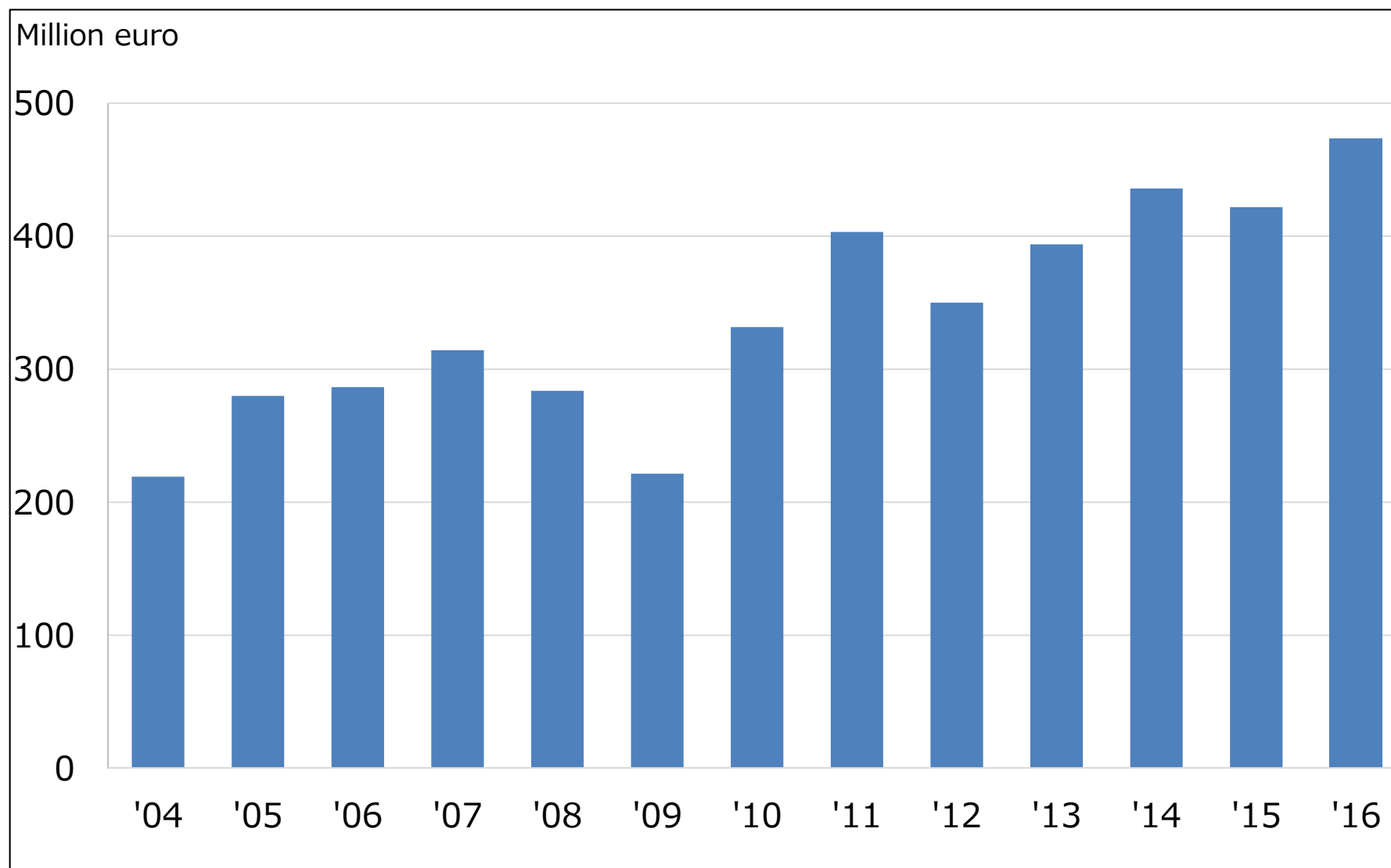




Method	Detail	Characteristics
(1) CTL	<p><b>Felling, Delimiting, Bucking</b> → <b>Extracting from forest, Loading to trailer</b> → <b>Transporting</b></p> <p>HE Harvester spec Crawler harvester Wheeled harvester Forwarder</p> <p><b>Felled trees are delimited and cut to length in the forest and transported to near public road.</b></p>	<p>Machine attachment (harvester head) fells, delimits, bucks (cut to length), and debarks trees. Extract logs to public roadside by forwarder.</p>
(2) FTL	<p><b>Felling</b> → <b>Extracting</b> → <b>Delimiting, Bucking</b> → <b>Collecting, loading</b> → <b>Transporting</b></p> <p>Wheeled feller buncher Crawler feller buncher Crawler skidder Wheel skidder Crawler processor HE processor Wheel log loader</p> <p><b>Felled trees are extracted with full tree length. Trees bucked and processed in a different area.</b></p>	<p>Machine attachment (felling head) fells trees and skidder extracts trees with branches and barks. Skidding usually damages ground and young trees. This method has been developed in North America and is able to fell trees in large volume in a short time.</p>

# KOMATSU History of Komatsu Forest Machine Business





**Forest machines widely used in Northern Europe****Wheeled harvester**

Felling tree and buck tree to make logs on the site.  
Max 800mm diameter.

**Forwarder**

Extracting logs after bucking tree from site to public roadside.  
Max load : 20 tons  
Average traveling distance : 200 to 300 m

For reducing damage of ground, the machine equip several tire ( Max 8 wheels ) reducing ground pressure.



**Forest machines widely used in North America****Feller buncher**

Felling trees on the bottom and bunching several trees with felling head.

**Skidder**

Extracting full length trees skidding on the ground.



- High production extracting several trees at the same time.
- On the other hand, skidding trees might damage ground.



PC200F-8M0  
Harvester (Brazil)



PC138US-10  
Harvester (Japan)



PC138US-10  
Grapple (Japan)



PC130F-7  
Harvester (Indonesia)



PC130F-7  
Feller Buncher  
(Indonesia)



PC300-8  
Swing Yarder  
(Indonesia)



# KOMATSU ICT by Komatsu Forest (MaxiXplorer, MaxiFleet, PROACT) 10

Machine, Machine & Head,  
Head

Visualize, Optimize,  
Assist & Report

Service Provider  
(Komatsu)

## Control System

## Information Cloud

## Service Product

Machine Data Reports & Production Data Reports,  
KPI, GIS Maps, Remote Control & Access,

Inspection, Maintenance,  
Training & Follow-Up

(Maintenance contract for  
every 500-750 hours)

PROACT 2.0

MaxiXplorer

MaxiXplorer



Setting    Production Machine data



Operator



Operator, Machine Owner,  
Forest company (and Komatsu)



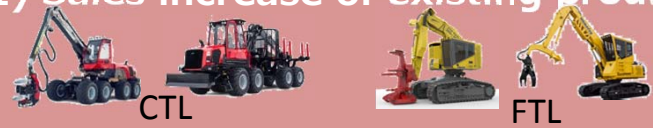
Service Provider/Technician,  
Operator, Machine owner  
(and Komatsu)



Focusing on **forest machine business** as core business following after construction and mining equipment and **expand the business further**

## 1. Direction of Komatsu Forest Machine Business (Basic Concept)

**(1) Sales increase of existing products**



- ◆ CTL product
  - ◆ Development of harvesters and forwarders, KFAB as a core
- ◆ FTL product
  - ◆ Development of Dantotsu product in North America as a main development center

**(2) Innovation and new field**

1. MaxiXplorer (Machine data)    2. MaxiFleet (Fleet management)    3. ProACT 2.0 (Maintenance service)



D85 bulldozer, Silviculture spec



- ◆ Expanding solution business
  - ◆ Aftermarket business
  - ◆ Promoting "Smart forestry" (Utilizing Kom-Connect)
  - ◆ Getting into silviculture machine business

**(3) Promoting mechanization in strategic markets**

PC200F-8 Harvester spec (Brazil)

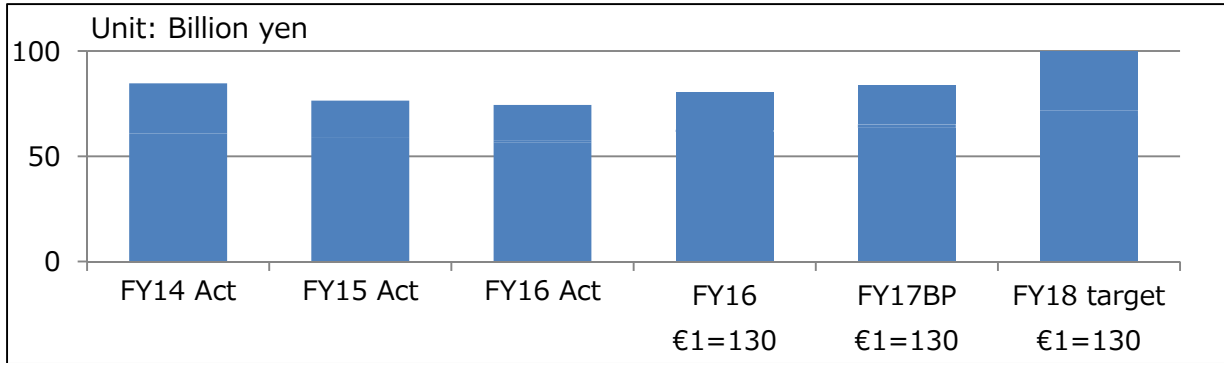


PC130F-7 Harvester spec (Indonesia)



- ◆ Mechanization in large-scale plantations
  - ◆ Brazil; Retain customers by service contract
  - ◆ Indonesia; Collaborate with distributor and establish benchmark for other Southeast Asia countries
- ◆ Promoting mechanization in Japan
  - ◆ Increase product line

## 2. Forest machine sales



Base on mid-term business plan,  
**Sales target in FY18 = 100 billion yen**  
 (1€=¥130 basis)