Environmental Initiatives

1. Initiatives for Products and Services

Approximately 90% of the CO2 emitted over the course of the construction equipment lifecycles occurs during use. For this reason, Komatsu is working to reduce the CO2 emitted from its products as a result of use. Through our three-step approach of focusing on DANTOTSU Product, DANTOTSU Service, and DANTOTSU Solution, we are targeting a reduction in CO2 from product use of 50% from 2010's level by 2030.

Three-Step Approach toward Reducing CO2 Emissions from Product Use

**STEP 1**
Reduce CO2 Emissions through DANTOTSU Product

By delivering hybrid and electric equipment and other sophisticated products with exceptional fuel efficiency, we aim to reduce CO2 emissions from product use.

- **Research and Development of Electric Mini Excavator**
  Komatsu's Electric Mini Excavator was developed with a view to the future. This excavator was first exhibited at bauma 2019, an international construction equipment trade show held in Munich, Germany. Built upon the technologies cultivated through the creation of hybrid construction equipment and battery-powered forklifts, the miniature excavator is equipped with a newly developed charger and high-voltage transformer, which enables it to achieve excavating capacity equivalent to that of engine-powered excavators with the same output. Moreover, emissions are zero and noise pollution is greatly reduced, making this excavator friendly both toward the environment and people. These features will no doubt prove to be valuable in construction projects at hospitals, schools and in residential areas, where it was previously necessary to take steps to mitigate exhaust and noise pollution, in addition to tunnels, which could fit with exhaust gas. We are currently testing the excavator at actual construction sites with the aim of realizing a swift market launch.

**STEP 2**
Reduce CO2 Emissions through DANTOTSU Service

Komatsu is pursuing reduction in CO2 emissions by using next-generation KOMTRAX systems and Internet of Things technologies to track equipment operating conditions in order to realize increased work efficiency.

**STEP 3**
Reduce CO2 Emissions throughout Construction Projects with DANTOTSU Solution

Through the provision of ICT equipment and optimal solutions for customers’ operations, Komatsu aims to realize improvements in on-site construction methods and thereby reduce CO2 emissions.

Reduction of CO2 Emissions from Product Use

<table>
<thead>
<tr>
<th>Basic unit</th>
<th>Targets for CO2 Reductions from Product Use</th>
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<tbody>
<tr>
<td>100</td>
<td><img src="graph.png" alt="Graph showing 50% reduction by 2030" /></td>
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**Reduction of CO2 Emissions**

- Product improvements (fuel efficiency, etc.)
- Construction method improvements
- Development of electric and hybrid equipment

Construction Equipment Lifecycle Spanning from Production to Disposal

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Manufacturing</th>
<th>Sales / After-Sale Service</th>
<th>Use</th>
<th>Recovery / Disassembly</th>
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<tbody>
<tr>
<td>2030 Targets</td>
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<tr>
<td>CO2 emissions from production: 50% reduction (from 2010)</td>
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<tr>
<td>CO2 emissions from product use: 50% reduction (from 2010)</td>
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<td>Rate of renewable energy use: 50%</td>
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Komatsu is working to reduce the CO2 emitted during the use of its construction equipment through the development of fuel-efficient products, such as those using high-efficiency engines and hybrid systems. We are also going further by taking part in initiatives for addressing CO2 emissions throughout work sites by automating sites or using autonomous operation to increase construction efficiency. Another angle through which we are combating climate change with innovations is the development of electric construction equipment.

At production sites, we are looking to lower CO2 emissions by changing the mix of electric construction equipment.

**Priority Issues**

With the increasing frequency of abnormal weather events, climate change is having a greater impact on our lives. The adoption of the Paris Agreement sparked a large global movement toward the realization of a low-carbon society. In recognition of this issue, Komatsu put forth the bold target of halving its CO2 emissions by 2030.

In its capacity as the operator of a global business, Komatsu is poised to help combat climate change by supplying the world with low-carbon products, services, and solutions that contribute to reduced CO2 emissions during use and, of course, by cutting the emissions from its own production activities.

In addition to combating climate change, the focus of the initiatives described thus far, we believe that the effective use of resources is another important task needing to be addressed in order to realize a sustainable society. On this front, we are expanding our “Reman” business in which we remanufacture used engines, transmissions, and other key components so that they can be reformed with the same quality as new products and then sold on the market. In FY2018, the scale of the “Reman” business was more than four times larger than in FY2004, demonstrating its increased contributions to the establishment of a sound material-cycle society. Targets for 2030 for reductions to waste and water use have been set, and we are promoting the effective use of these resources to accomplish these targets. In regard to biodiversity, the Declaration of Biodiversity by Komatsu was unveiled in 2011. Guided by this declaration, each operating site chooses one biodiversity theme to address, with examples including conservation activities targeting woodland areas, waterfarms, or rare animals. These sites are advancing initiatives pertaining to them both inside and outside of the premises through collaboration with local community members and organizations.

Going forward, Komatsu will continue to use products and solutions with superior environmental performance realized through cutting-edge technologies while innovating its production sites to enrich our lives today and help realize a sustainable society to be passed on to the future generations of tomorrow.
Environmental Issues

2 Initiatives for Production
Komatsu is endeavoring to reduce CO2 emissions, waste production, and water use in its production activities. In regard to CO2 emissions, the Company aims to accomplish the following targets by 2030.

1. Reduce CO2 per unit of production at major production sites worldwide by 50% (in comparison with 2010)
2. Source 50% of the electricity used at major production sites worldwide from renewable energy

3 Initiatives with Suppliers
Komatsu views its suppliers as important partners that support its manufacturing activities by enabling it to procure materials, parts, components, and other articles. As we seek to build mutual trust and mutually beneficial win-win relationships, we are advancing the following initiatives together with suppliers.

- Implementation of Komatsu’s Green Procurement Principles
- Assistance for developing of environmental management systems at suppliers
- Support for reducing environmental impacts at suppliers

Support for Reducing Environmental Impacts at Suppliers
Komatsu continues to advance the energy conservation activities it launched at its operating sites in 2011 while reticulating these activities with the aim of reducing CO2 emissions at suppliers. These activities target 50% reductions in energy use through product reforms. In addition, the Company is pursuing reduction in water use by suppliers. As one facet of these activities, we have been visiting selected suppliers offering advice on better water use since FY2017.

5 Biodiversity Preservation
With the establishment of the Declaration of Biodiversity by Komatsu and the Biodiversity Guideline in January 2011, Komatsu business units worldwide began activities designed to preserve biodiversity. Komatsu is becoming directly involved in the preservation of biodiversity and at the same time expanding its “one-site, one-theme activities” to raise employees’ awareness of the need to preserve local ecosystems.

Activities at Komatsu do Brasil
Located in São Paula, Brazil, Komatsu do Brasil Ltda. (KDB) is situated on an expansive site covered in forests that house a great variety of wildlife. A survey conducted in 2013 found that the site of KDB was located in part of the Atlantic Forest, and that the site was home to approximately 70 different species of fauna and 82 different species of flora. Among this rich variety of fauna and flora was the endangered and rare species pau-brasil (Paubrasilia echinata), a tree that is emblematic of Brazil.

Brazil. Going forward, KDB plans to expand the greenery around its facility while taking into account the ideal conditions for fauna and flora that inhabit the area. In addition, employees and members of their families take part in tree planting activities to raise their environmental awareness; adult fruit trees and saplings are donated to city offices; and other environmental education activities are conducted by KDB both inside and outside of its facility.

Production Activity Energy Conservation Initiatives
In January 2019, the Smart Line developed together with Group company Komatsu NTC Ltd. was installed at the Oyama Plant for use in major engine component machining processes. The Smart Line comprises six horizontal machining centers, a gantry conveyance system equipped with inspection functions, a submerged high-pressure washing machine, and a vacuum oven. The specifications of this line are being improved to ensure that each piece of equipment is able to deliver the best possible performance in its respective process. In addition, optimal design and control are employed to supply the drive systems of coolant pumps, hydraulic pumps, and other equipment with power in the necessary amounts at the necessary times. The line has thereby been able to achieve an 80% reduction in energy consumption compared to the previous line.

The Smart Line was first installed at the Oyama Plant. Going forward, we intend to introduce such lines at other plants that perform machining.

Expansion of Renewable Energy Use
In response to a request from the Thailand Board of Investment to take part in an energy conservation project,* Bangkok Komatsu Co., Ltd., a Group company in Thailand, commenced the installation of solar roofs. The first phase of the installation plan entailed the building of a solar roof on the company’s manufacturing plant. This roof generated 690 MWh of solar energy in FY2017. The amount generated in FY2018 was 885 MWh, which contributed to a year-on-year increase in renewable energy generated of approximately 30% and accounted for 13.7% of power consumption at the factory. Bangkok Komatsu plans to install solar roofs on its assembly plant and casting plant going forward.

* Project that allows for a tax deduction equivalent to 50% of the cost of introducing a solar system should certification be received.

Outline of Operations  Komatsu’s Growth Strategies  ESG Issues  Corporate Profile