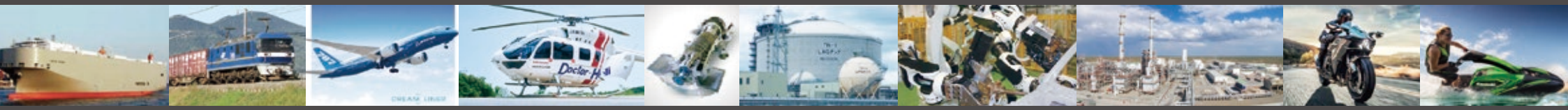
Kawasaki's Business Processes: Green Value Chains

Kawasaki is a comprehensive heavy industry manufacturer that contributes to the maintenance and development of environmental sustainability through its advanced technological prowess.

Products by Category

- **Transport:** Ships, rolling stock, aerospace
- **Energy:** Cogeneration, energy plants, gas turbines, gas engines
- **Industrial equipment:** Hydraulic machinery, industrial robots, industrial plants, environmental/recycling plants
- **Leisure:** Motorcycles, off-road utility vehicles, JET SKI® personal watercraft (PWC)



Green value chains

Raw material procurement

- Steel
- Non-ferrous metals (copper, aluminum, nickel, etc.)

Transport (upstream)

- Land transport
- Marine transport
- Air transport

- Scope 3 emissions (supply chain emissions): 121,280,377 t-CO_2

Environmental effects: Aspect and impact

Aspect	Impact
Manufacturing processes • Air: Emissions of CO_2, soot, SOx and NOx • Water: Discharge of industrial water • Soil: Use of harmful chemical substances	• Air: Global warming, atmospheric pollution • Water: Water pollution • Soil: Soil pollution, groundwater pollution
Transport processes • Air: Emissions of CO_2, soot, SOx and NOx • Water: Discharge of ballast water, use of scrubbers (exhaust gas cleaning systems)	• Air: Global warming, atmospheric pollution • Water: Water pollution, spread of invasive species

Risks and Opportunities

Risks	Opportunities
• Halt of operations or production adjustments at suppliers due to accidents • Increases in steel prices	• Supply chain diversification
• Transport route disruptions due to extreme weather	• Modal shifts • Transport route diversification

SDGs

GRI standards (see p. 5)

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Impact of Business Activities on the Environment during Fiscal 2019

INPUT

Energy consumption (Year-on-year change)

Total energy (heat conversion)	6,348 TJ (+1%)
Fuel	2,346 TJ (+1%)
Purchased electricity	408 GWh (±0%)
Renewable energy	1.5 GWh (-6%)

Main materials (steel) (Year-on-year change)

Amount purchased as steel material	110,000 t (0%)

Water (Year-on-year change)

5,980,000 m^3 (-8%)

Business activities

Key domestic factories:	10 sites
Net sales (non-consolidated):	¥1,250.3 billion

Manufacturing	• Factories and other production facilities • Energy and water consumption • Greenhouse gases (GHGs) • Scope 1 emissions (direct emissions): 127,189 t-CO_2 • Scope 2 emissions (indirect emissions from energy): 157,934 t-CO_2	**Manufacturing processes** • Air: Emissions of CO_2, soot, SOx and NOx • Water: Discharge of industrial water (use of groundwater, etc.) • Soil: Use of harmful chemical substances	• Air: Global warming, atmospheric pollution • Water: Water pollution (water resource depletion, etc.) • Soil: Soil pollution, groundwater pollution	• Climate risks (p. 6-7) • Halt of operations or loss of trust due to accidents	• Use of Kawasaki-brand products • New market development • Increasing value added	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 301 / 302 303 / 305 306
Transport (downstream)	• Land transport • Marine transport • Air transport • Scope 3 emissions (supply chain emissions): 121,280,377 t-CO_2	**Transport processes** • Air: Emissions of CO_2, soot, SOx and NOx • Water: Discharge of ballast water, use of scrubbers (exhaust gas cleaning systems)	• Air: Global warming, atmospheric pollution • Water: Water pollution, spread of invasive species	• Transport route disruptions due to extreme weather	• Modal shifts • Transport route diversification	7 AFFORDABLE AND CLEAN ENERGY, 14 LIFE BELOW WATER 305
Use	• Ships and specialty vessels • Commercial vessels • Rolling stock • Airplanes • Jet engines • Energy equipment • Plant facilities • Marine propulsion machinery • Motorcycles • Utility vehicles and personal watercraft • General-purpose engines • Precision machinery • Robots • Greenhouse gases (GHGs) • Scope 3 emissions (supply chain emissions): 121,280,377 t-CO_2	**Product use** • Air: Emissions of CO_2, soot, SOx and NOx • Water: Discharge of ballast water, use of cooling water	• Air: Global warming, atmospheric pollution • Water: Water pollution • Soil: Soil pollution	• Claims on manufacturer's liability	• Shift from one-time sale businesses to maintenance and other recurring revenue businesses	11 SUSTAINABLE CITIES AND COMMUNITIES, 13 CLIMATE ACTION 305
Disposal	• Scrap	**Disassembly and breakdown** • Air: Emissions of CO_2 and soot	• Air: Global warming, atmospheric pollution	—	• Increase practice of the 3Rs	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

OUTPUT

Air (Year-on-year change)

Greenhouse gases	285,000 t-CO_2 (-5%)
SOx	4t (+100%) *
NOx	129t (-23%)

Waste (Year-on-year change)

Total waste	50,200 t (-4%)
Recycled	48,900 t (-5%)
Others	1,200 t (±0%)

Water (Year-on-year change)

Total wastewater	4,500,000 m^3 (-2%)

* Due to increased test operation of ship engines

Areas covered by GRI standards

301 : Materials 302 : Energy
303 : Water and Effluents 305 : Emissions
306 : Effluents and Waste