

# The Biomass Market in Japan

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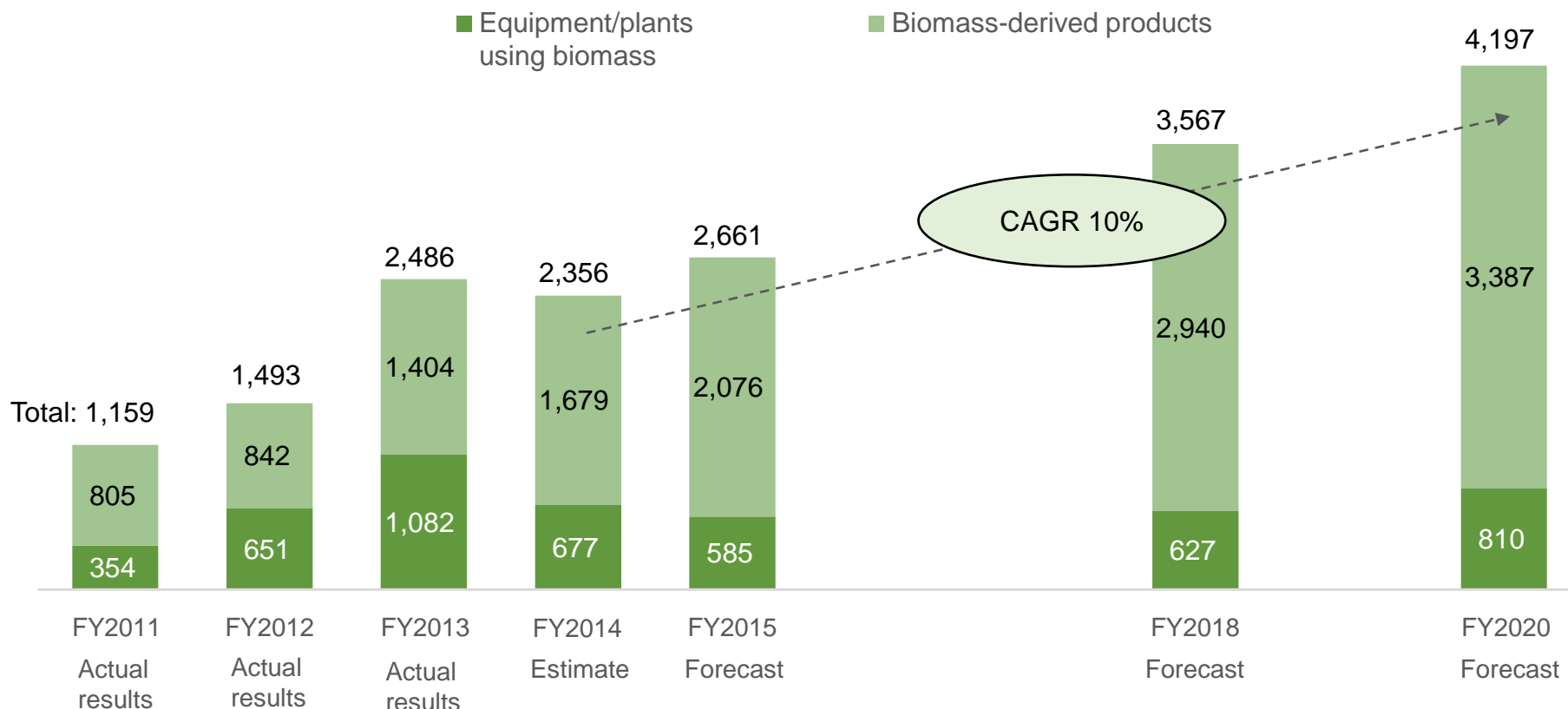
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**Title: The Biomass Market in Japan**

**(1) Market size**

If considering the market size of the biomass market in terms of equipment/plants utilized in biomass energy generation, and biomass-derived products (electricity, pellets, biogas, etc.), the size of the market was estimated to be 235.6 billion yen in 2014. Within that amount, biomass-derived products comprised 70%. In the coming years, the market is projected to expand further, transitioning to a CAGR of 10% and expected to reach 418.7 billion yen by 2020.

**Trends in the Size of the Biomass Market (in 100m's of yen)**

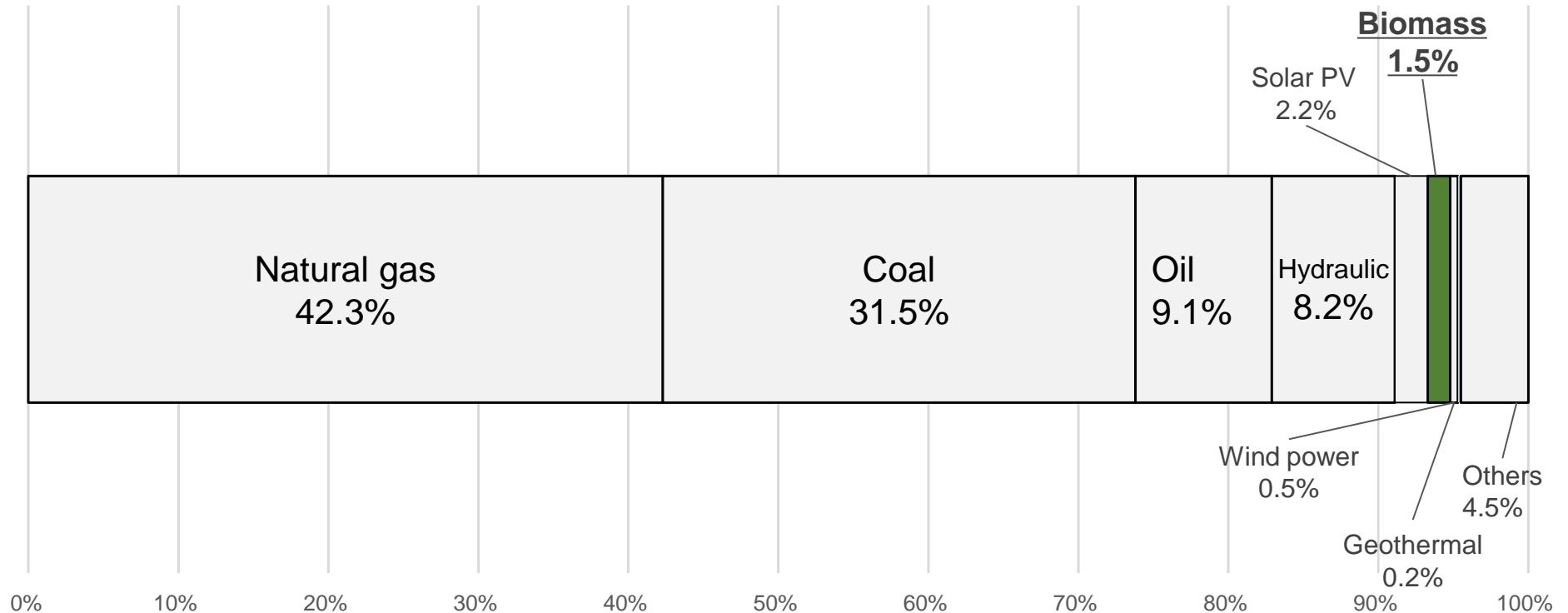


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### (2) Penetration of biomass

In 2014, biomass accounted for 1.5% of the total amount of electricity generated, making it the second largest renewable energy source after solar power (2.2%). Over the last few years, several large-scale biomass plants have also been constructed\*1 and biomass power is expected to see further growth.

#### Breakdown of Annual Energy Production in Japan (FY 2014)

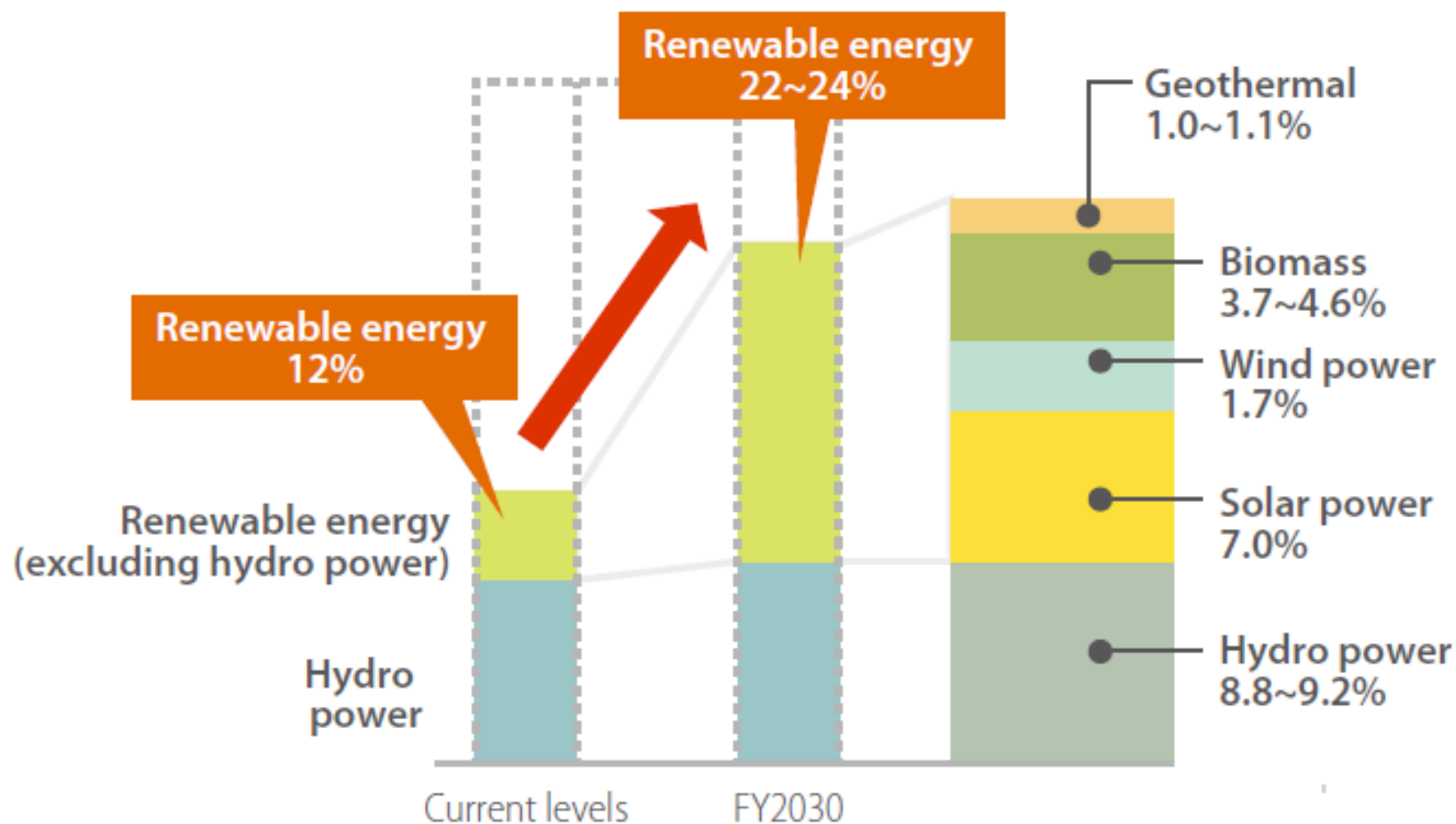


\*Source: Agency for Natural Resources and Energy, *Trends in the Introduction of the Various Renewable Energy Sources*, 2015

\*1 Please refer to the monthly newsletter (Environment & Energy / ICT, June issue) for more specific examples of power station construction projects.

# Renewable energy

Two-fold increase from current levels (from 12% to 22-24%)



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### (3) Promotional policy by the government

Aiming for the further spread of renewable energy, the government established the feed-in tariff scheme in 2012. The scheme obligated all electrical companies to purchase electricity generated using renewable energy sources (such as solar power, wind power, geothermal, hydraulic power, and biomass) at a fixed price. While solar power has reached saturation point and resulted in lower purchase prices for solar energy, FIT prices for biomass energy still maintain high levels.

#### Purchase Prices for Biomass Energy, by Fuel Type (FY 2016)

Fuel Type		Purchase Price
Methane gas (biomass-derived)		39 yen + consumption tax
Woody biomass from forest thinning	2,000kW and under	40 yen + consumption tax
	2,000kW+	32 yen + consumption tax
General woody biomass/biomass from agricultural harvesting		24 yen + consumption tax
Waste from construction materials		13 yen + consumption tax
General waste Other biomass		17 yen + consumption tax

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### (4) Competitors/Potential partners

The market for biomass-derived products (solid biomass fuels/carbonized biomass, woody biomass, and algae products) is still developing, with *a potential need for partnerships with foreign companies who are in possession of advanced technologies.*

#### Major Players in Biomass-derived Products

Bioethanol	<ul style="list-style-type: none"> <li>• JBSL</li> <li>• Brazil-Japan Ethanol</li> </ul>	<ul style="list-style-type: none"> <li>• National Federation of Agricultural Cooperative Associations</li> </ul>
Biomass energy	<ul style="list-style-type: none"> <li>• Kawasaki Biomass</li> <li>• Summit Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Mombetsu Biomass</li> </ul>
Biogas	<ul style="list-style-type: none"> <li>• Kobelco Eco-Solutions</li> <li>• Bioenergy</li> </ul>	
Wood pellets	<ul style="list-style-type: none"> <li>• Meiken Lamwood Corp.</li> <li>• Miyazaki Wood Pellet</li> </ul>	<ul style="list-style-type: none"> <li>• Biomass Recycling Center</li> <li>• Kuzumaki Ringyo</li> </ul>
Biodiesel	<ul style="list-style-type: none"> <li>• Revointernational</li> <li>• Daiseki</li> </ul>	<ul style="list-style-type: none"> <li>• Advan</li> <li>• Eco ERC</li> </ul>
Solid biomass fuels/ carbonized biomass	<ul style="list-style-type: none"> <li>• Aichi Kinuura Bio</li> <li>• Biocoal Hiroshima-West</li> </ul>	
Woody biomass (cellulose nanofibers, lignin products)	<ul style="list-style-type: none"> <li>• Sugino Machine</li> <li>• Daisel FineChem</li> </ul>	
Algae products (food raw materials, biofuels)	<ul style="list-style-type: none"> <li>• IHI NeoG Algae</li> </ul>	

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### (4) Competitors/Potential partners

Major players in the market for equipment/plants utilizing biomass are listed below. Comprised of technology which uses algae, and bio-oil conversion, the market is still developing. As a result, there is a *potential need for partnerships with foreign companies who are in possession of advanced technologies.*

#### Major Players in Biomass Equipment/Plants\*1

Direct-fired biomass boiler	<ul style="list-style-type: none"> <li>• Takuma</li> <li>• Hitachi Zosen</li> </ul>	<ul style="list-style-type: none"> <li>• Mitsui Zosen</li> <li>• JFE Engineering</li> </ul>	<ul style="list-style-type: none"> <li>• Yoshimine</li> <li>• Sumitomo Heavy Industries</li> </ul>
Steam turbines for biomass boilers	<ul style="list-style-type: none"> <li>• JFE Engineering</li> <li>• Shinko</li> </ul>	<ul style="list-style-type: none"> <li>• Shin Nippon Machinery</li> </ul>	
Biogas conversion (methane fermentation)	<ul style="list-style-type: none"> <li>• Hitachi Zosen</li> <li>• Swing Corp.</li> </ul>	<ul style="list-style-type: none"> <li>• Mitsui Zosen</li> <li>• Drei-E</li> </ul>	<ul style="list-style-type: none"> <li>• Kubota</li> </ul>
Biogas generators	<ul style="list-style-type: none"> <li>• Yanmar Energy Systems</li> <li>• Ohara Corp.</li> </ul>		
Biomass / gas / fuel conversion	<ul style="list-style-type: none"> <li>• ZE Energy</li> <li>• Kobelco Eco-Solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Mitsui Zosen</li> <li>• Hitachi Zosen</li> </ul>	<ul style="list-style-type: none"> <li>• Chugai Ro</li> <li>• Kansai Corp.</li> </ul>
Carbonizing / solid biomass fuel conversion	<ul style="list-style-type: none"> <li>• Tsukishima Kikai</li> </ul>		
Wood pellet boilers	<ul style="list-style-type: none"> <li>• Takahashi Kikan</li> <li>• Yazaki Corp.</li> </ul>	<ul style="list-style-type: none"> <li>• Niko Engineering</li> <li>• Soai</li> </ul>	<ul style="list-style-type: none"> <li>• Nepon</li> <li>• Tomoe Techno</li> </ul>
Biodiesel conversion	<ul style="list-style-type: none"> <li>• Sebec</li> <li>• Daiki Axis</li> </ul>	<ul style="list-style-type: none"> <li>• BDF</li> <li>• Biomass Japan Inc.</li> </ul>	
Bioethanol conversion	<ul style="list-style-type: none"> <li>• JFE Engineering</li> <li>• Taisei Corp.</li> </ul>	<ul style="list-style-type: none"> <li>• Kawasaki Heavy Industries</li> <li>• Kansai Chemical Engineering</li> </ul>	
Technology using algae	<ul style="list-style-type: none"> <li>• Espec</li> <li>• Ebara Jitsugyo</li> </ul>	<ul style="list-style-type: none"> <li>• Schott AG</li> </ul>	
Bio-oil conversion	<ul style="list-style-type: none"> <li>• Meiwa Kogyo</li> </ul>		

\*1 Source: Fuji Keizai, *2015 Biomass Utilization Technology and Market : Reality and Future Prospect*, 2015  
Categories are listed in ascending order of market size.