Regional Distribution of Energy Potential of Woody Biomass (Vol. 3): Reduction of Total Production Cost of Woody Biomass

Woody biomass is widely distributed throughout Japan and is a widely available energy source. This evaluation revealed that operating costs calculated from forest management plans, forest registers and geographic information, as well as ones calculated under the uniform conditions in planted forests [1], are equivalent. Transportation costs were also calculated based on distance and means of transportation and an assessment of total forestry production costs was performed.

- The operating costs in each area were calculated based on forest management plans and other data. Compared to the previous report [1], in which conditions were uniform in planted forests, the yield was lower because restricted forests were excluded, but the timber volume (volume of wood per area) was comparable, so operating costs remained the same. Intensive forestry management that ensured scale, along with the introduction of multi-trailer trucks, made it possible to reduce transportation costs from current levels.
- Cost of woody biomass production in fifteen prefectures were at or below 5,000 JPY/m^3, which is comparable to those in Western forestry countries and is internationally competitive in terms of price (Figure 1).
- Another option for further development cost reduction is sharing infrastructures including roads with other renewable energy facilities such as small and medium hydro and wind power.

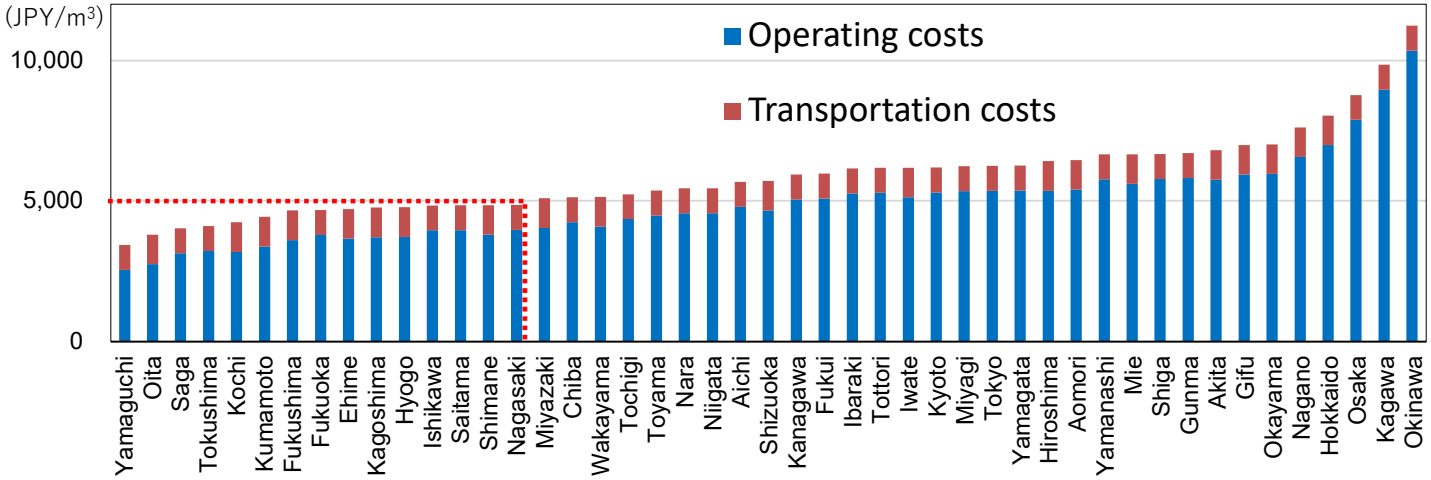

Figure 1: Cost of woody biomass production in each prefecture (JPY/m^3)

Proposals for Policy Development

1) To reduce forestry production costs, it is important to introduce high-performance forestry machine and maintain high labor productivity in sufficiently large planted forests. Multiple municipalities need to work together to support intensive forestry.
2) It is necessary to train and make active use of a forest manager who can supervise and instruct management plans and operations.
3) The development of road networks is essential for improving forestry productivity. Aiming at the completion of the road network within several decades, continuing the development with a small amount of support each year will lead to forestry development. The development of multi-trailer trucks, as well as maintenance of travel routes for these trucks, is also required.

[1] LCS Proposal Paper for Innovation Policy Development "Cost Reduction of Woody Biomass Fuels (vol.2): Total Production Cost and Cost Reduction Scenario of Woody Biomass", Mar. 2017.
https://www.jst.go.jp/lcs/pdf/fy2019-pp-06.pdf