

**“Present condition of bioenergy use and related institutional introduction in  
Mainland Southeast Asia”**

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Facing two global constraints, the rapid increment of energy consumption and global warming, an energy shift from fossil fuel to renewable energy is now ongoing. However, the simple expansion of energy crop plantation may result in land competition with food production or forest degradation. In this study, we aimed at evaluating the electricity generation potential from rice production residues of Mainland Southeast Asia, based on fieldwork and reference reviews. Besides the calculation of the electricity generation potential, we also aimed to put the related problems in order.

The electricity generation potentials of rice husk and rice straw were calculated separately. It became apparent that rice husk and straw accompanied with unit rice grain production have an energy potential of up to 0.067 (MWh· t<sup>-1</sup>) and 1.14 (MWh· t<sup>-1</sup>), respectively. The total potential of rice production residues was accounted as 1.207 (MWh· t<sup>-1</sup>) under present technology levels. Estimating from the average rice production between 2000 and 2005, its potential in each country varies from 30.8 to 1157.7 (%) of the annual electricity supply, and the total amount of paddy production residues have 82.8 (%) of the annual electricity consumption of this area. Land expansion of paddy field in Mainland Southeast Asia has already stabilized, but the yield level has been increased continuously. These facts approve that rice production residues in this area have a high potential for generating electricity.

However, the following difficulties still remain: 1. The collection system of paddy straw has to be established. 2. The relatively high content of alkaline and alkaline-earth metal in paddy straw causes corrosion of the boiler during combustion. 3. The concentration of similar power plants in a specific area may result in material

competition among the users, and encourage a rise of generation costs. 4. The material cycle of paddy field will be changed by taking rice straw. Nevertheless, such effective utilization of agricultural residue seemed to be encouraged especially in developing countries for supporting economical development whilst harmonizing with global environmental issues.