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**The case of co-firing: The market level effects of subsidizing biomass co-combustion**

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***Abstract***

Biomass combustion in co-firing power plants has been treated differently in renewable electricity promoting policy schemes. Some policy schemes subsidize biomass co-combustion while some do not. In this study, we analyze the impacts of a policy choice on the fuel uses, investment decisions, CO<sub>2</sub> emissions, and on the values of renewable electricity promoting policy instruments. In particular, we look at the impacts of feed-in tariff and a subsidy to renewable energy, both together with CO<sub>2</sub> emissions price. We present an electricity and heat market model, where all the solid fossil fuel power plants are able to co-fire biomass and fossil fuel. In the numerical application, the model is used to analyze the differences caused by the policy instruments. The results show that subsidizing biomass combustion in a co-firing power plant decreases the investments in pure renewable technology. However, the use of solid fossil fuels is not increased significantly. Also, the CO<sub>2</sub> intensity levels of electricity production are nearly equal whether biomass co-combustion is subsidized or not.

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