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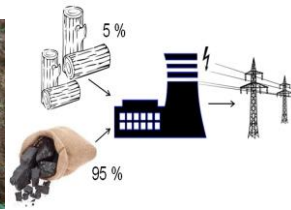
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## CO-FIRING OF BIOMASS



Acacia in NuiPhao 10.05.2016 (UfU, 2016)



Co-firing (Weiland, 2017)

### CO-FIRING

Co-firing is the combustion of two different types of materials at the same time. The existing infrastructure of coal power plants can be used to burn a new fuel, which may be cheaper or more environmentally friendly. This reduces the demand for coal. In addition, co-firing biomass with coal is a relatively low-cost technology to utilize biomass for electricity production compared to dedicated biomass power plant. (Truong, 2016).

### ENERGY CROPS FOR CO-FIRING IN VIETNAM

For co-firing energy crops as well as agricultural and forestry residues can be utilised. Rice straw, fuel wood, corn residue, rice husk, bagasse and wood waste show the highest biomass potential in Vietnam (Truong, 2016). So far 60-90% of the rice straw are burned in fields (Truong, 2015).

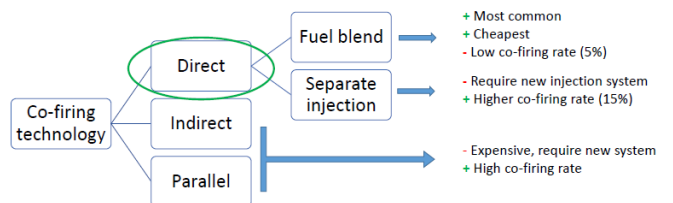
Within the scope of the CPEP project the materials tested for possible co-firing are *Acacia* hybrids and *Melaleuca* hybrids as fuel woods as well as residues of other energy crops like sunflower (straw and seed husks), jatropha (shells and seed husks), *Vernicia montana* (oil seed cake and wood), cassava (plant material) peanut and cashew (plant material and shells).

### TECHNOLOGIES FOR CO-FIRING IN VIETNAM

Co-firing in Vietnam is still in the pilot phase (Truong, 2016). Direct co-firing of 5% wood pellets with coal is possible without adaptation of the power plant (Weiland, 2017). With regard to the number of planned coal-fired power plants by 2030 and the difference between coal demand and coal output during this period, this measure has considerable potential (Weiland, 2017).

A case study of co-firing 5% rice straw with coal in Ninh Binh Coal Power Plant shows economic benefits and significant positive externalities. Controlled and filtered co-firing of biomass benefits to public health by improving the local air quality and a reduction of GHG emission (Truong, 2015, 2016).

Co-firing is most attractive where coal power plants are located in areas with available biomass resources. Direct co-firing is the most suitable technology for Vietnam (Truong, 2016).



Truong, 2016

### APPLICATIONS OF CO-FIRING

Co-firing biomass with coal can be used for electricity and heat generation. The utilisation of the local biomass supply increases the value of agricultural wastes. Co-firing biomass in coal power plants reduces open field burnings and the associated air pollution (Truong, 2016).