

## **Cluster activities in Northern Sweden in the biofuels area**

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Several new R&D efforts with focus on conversion of lignocellulosic feedstocks to biofuels, chemicals, and materials have recently been initiated in Northern Sweden. These initiatives, which are based on collaborations between participants from companies, academy, and local government and organizations, cover industrial-scale biorefining as well as cutting-edge research on feedstock and bioenergy. The Biorefinery of the Future engages companies in the biorefinery area as well as universities and organizations in the region. The Bio4Energy consortium was selected for research on energy combines and biorefining of lignocellulose in the evaluation process after the Swedish Government's commitment to high-quality research in areas of strategic importance. BioImprove is dedicated to research on the identification of molecular mechanisms that control biomass production and chemical composition of the wood in forest trees, and how this knowledge can be utilised to improve production of biofuels, materials, and green chemicals. The feedstocks investigated in these programmes include softwood, hardwood, agricultural residues, and residues from industrial processes, e.g. black liquor and fiber sludge. Conversion of lignocellulosic feedstocks to gaseous, liquid and solid biofuels is studied in processes based on chemical catalysts and biocatalysts. Different strategies for feedstock pretreatment and production of advanced biofuels in biorefining of lignocellulose will be discussed.