

BIOENERGY – from feedstock to energy

SOLID biomass feedstock	fuel generation technology	fuel produced	energy technology	bioenergy output
wood, paper pulp, wood wastes	Cutting and splitting, shredding, bundling and baling, presses etc.	Logs, wood chips, pellets, saw dust, briquettes	Direct combustion (pile, stoker, suspension, fluidised bed boilers) Cofiring Gasification	Heat Electricity Steam Mechanical movement
agri-residues, eg rice husks, nut shells, bagasse, straw, cotton sticks, etc		crop residues		
wood		charcoal		
peat		peat briquettes		
municipal & industrial waste		solid recovery fuels		
LIQUID biomass feedstock	fuel generation technology	fuel produced	energy technology	bioenergy output
sugar cane, sweet sorghum, cassava, sugar beet, potatoes, wheat, corn, wood	Extraction/Esterification Pyrolysis Hydrolysis/Fermentation Distillation	alcohols : ethanol, methanol	Internal combustion engine, electrical generators	Transport Heat Electricity
vegetable oils (sunflower, jatropha, groundnut, mamona, soybean, rape seed), nut oils (oil palms, coconut), recycled oils		biodiesel		
ethanol and cellulose		gel fuel		
wood		pyrolysis oil		
GASEOUS biomass feedstock	fuel generation technology	fuel produced	energy technology	bioenergy output
wet animal wastes, sewage treatment, agro-alimentary wastes, landfill	Anaerobic digestion	biogas	Internal combustion engine,	Electricity Transport Cooking Heating