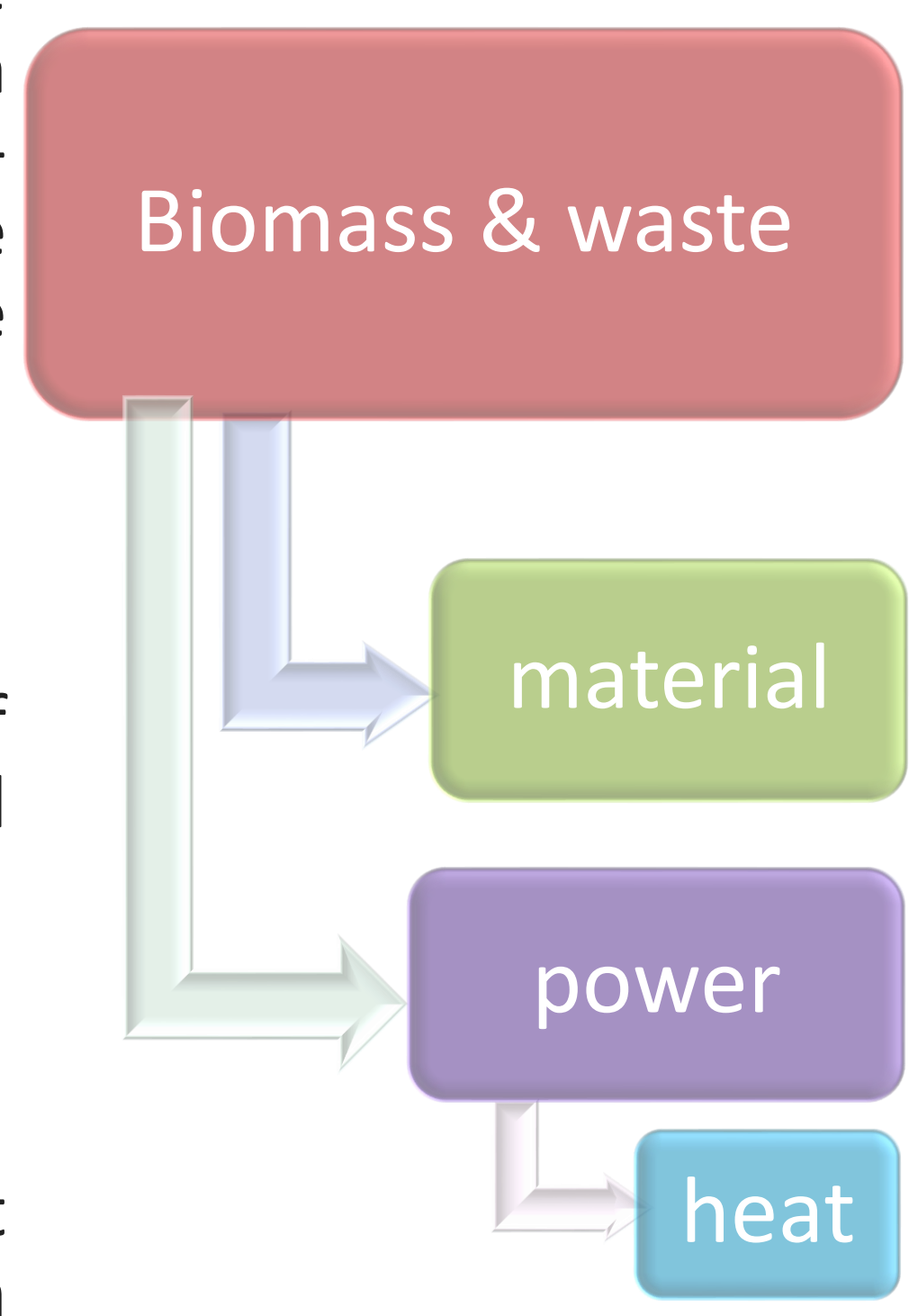


The laboratory deals with research and technological development of innovative thermochemical processes at laboratory and pilot scale, for energy and matter recovery, from biomass and wastes. These activities are carried out by experimenting research plants in ENEA-Trisaia. All the scientific and technological production is oriented by correct strategies for the biomass and waste management that are considered resources. The main skillness of the laboratory are:

- \* Characterization of biomass and waste for energy and matter recovery processes
- \* Study, development and demonstration of the thermochemical conversion processes of biomass and waste (pyrolysis, gasification, combustion, etc. ) to obtain thermal and electrical energy, syngas, synthetic biofuels (SNG, DME, FT), high added value materials and products
- \* Analytical support to the experimental activities on pilot and pre-industrial plants
- \* Consulting services, technical-economic studies, support for experimental development activities of prototype pilot plants for SMEs, public institutions, etc. and participation in scientific committees, such as EERA, IEA Task and CTI.



## Platform for thermochemical biomass and waste conversion to syngas



Three stage gasifier



Rotary kiln gasifier

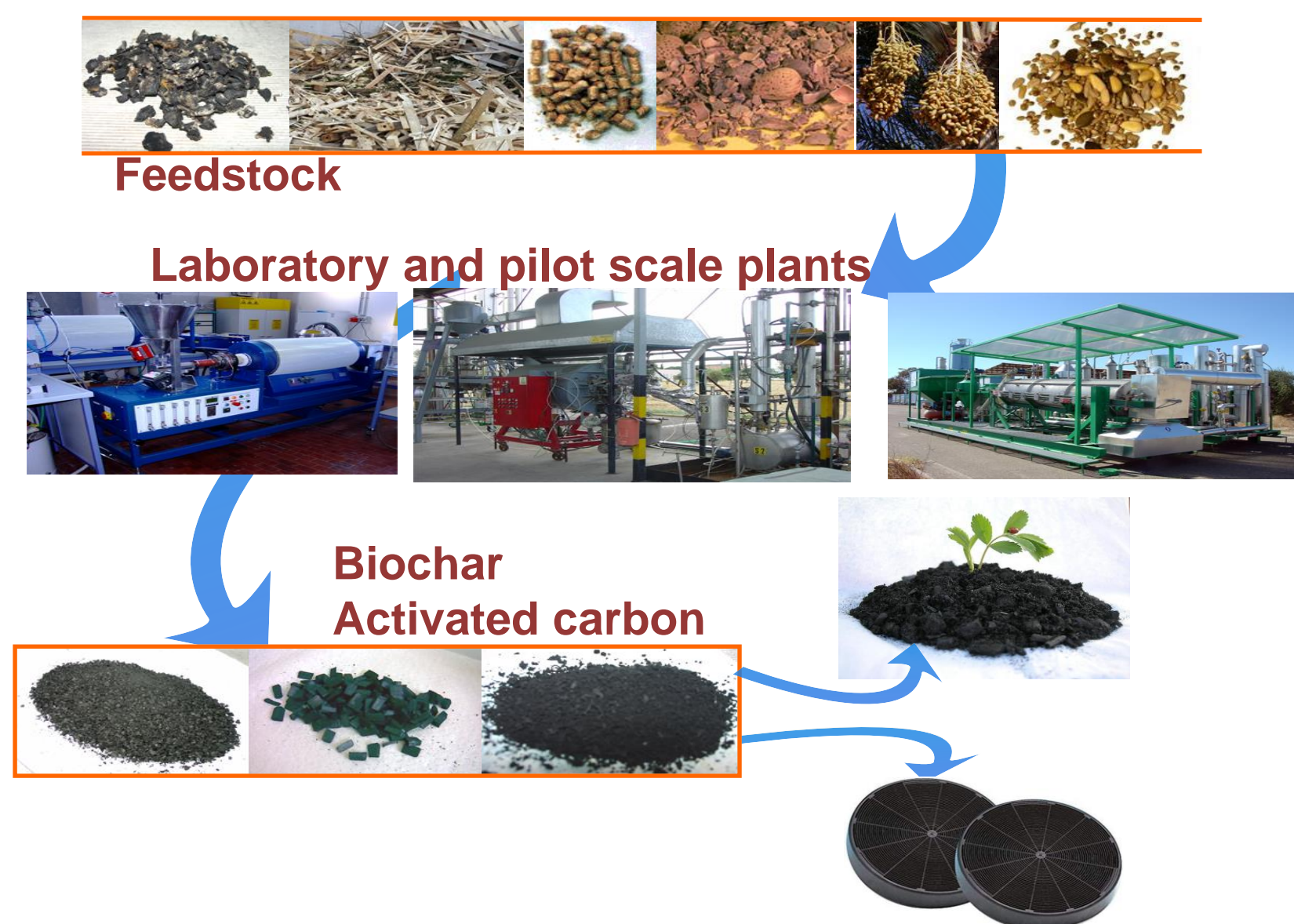


Fixed bed updraft gasifier



Internally circulating bubbling fluidized bed gasifier

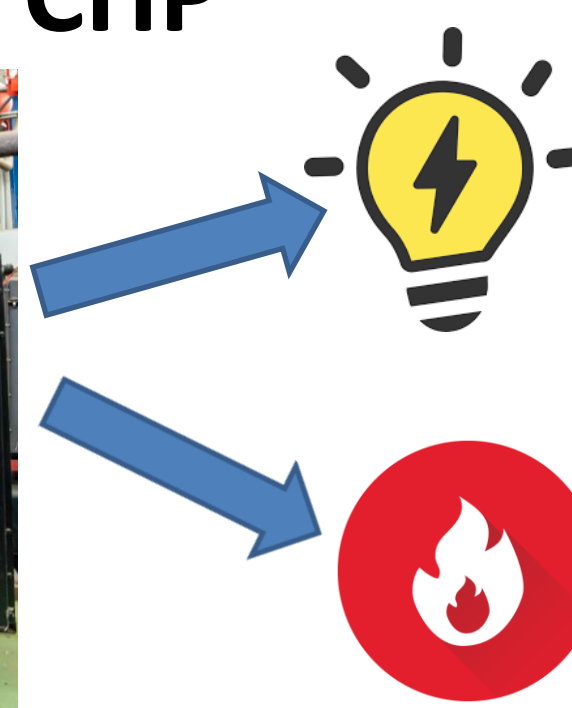
### Material recovery from biomass



### Gasification for CHP



Internal combustion engine coupled with fixed bed downdraft gasifier for CHP



### Gasification and syngas conversion to synthetic natural gas, hydrogen, biofuels and chemicals

