

Ninety percent of raw materials used in the EU chemical industry are of fossil origin. A future industrial system that is independent of fossil resources will require the use of alternative carbon sources (ACS), such as CO₂ or biomass, to produce chemicals and materials. Processes that use alternative sources of carbon are, however, not inherently sustainable. Their sustainability is technology and context dependent. The approaches taken to screen, design and scale up (new) technologies have changed, and it now requires that engineers consider a technology's technical, economic, and environmental performance as well as potential trade-offs in the short and longer-term at different levels (unit, plant, value chain, system) as part of the transformation of industrial sectors.