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## From laboratory to industrial scale: scale-up calculations of chemical processes for LCA

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Today, several LCAs of new materials are performed based on laboratory experiments. While this is helpful in understanding the production process, it gives no indication on how the environmental impact looks like for an industrial production. This also limits the comparability with existing material that is already produced in large quantities. The scale-up of chemical processes is not such a trivial process but involves a certain understanding of the involved steps. We present a framework on how to upscale chemical production processes for LCA purposes when only laboratory experiments are available. The calculations, estimations and considerations are designed to be used by LCA practitioners with limited knowledge in the field of chemistry or chemical engineering and help to perform such a scale-up based on a logical and systematic procedure. The developed framework is illustrated on the example of a nanocellulose case study.

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