

## Accepted Manuscript

Title: Sustainable production of chemical intermediates for nylon manufacture: a techno-economic analysis for renewable production of caprolactone

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PII: S0263-8762(18)30265-X  
DOI: <https://doi.org/10.1016/j.cherd.2018.05.026>  
Reference: CHERD 3190

To appear in:

Received date: 30-7-2017  
Revised date: 27-3-2018  
Accepted date: 18-5-2018

Please cite this article as: Thaore, Vaishali, Chadwick, David, Shah, Nilay, Sustainable production of chemical intermediates for nylon manufacture: a techno-economic analysis for renewable production of caprolactone. *Chemical Engineering Research and Design* <https://doi.org/10.1016/j.cherd.2018.05.026>

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## Sustainable production of chemical intermediates for nylon manufacture: a techno-economic analysis for renewable production of caprolactone

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### Research Highlights

- Process model developed for the conversion of biomass to caprolactone via glucose and 5-hydroxymethyl furfural (HMF)
- Addressed the overall sustainability in terms of economic and environmental impact factor: GHG emissions.
- Efficient approach identified for the separation of 1,5 and 1,6-hexanediol.
- Sustainable bio-based caprolactone production requires the valorisation of major by-products.

### Abstract

Caprolactone is a precursor for the synthesis of caprolactam, the key monomer for nylon-6 which is produced globally at a scale of 4 million tons per annum. This work describes and assesses a bio-based production route to caprolactone from an agricultural residue, specifically

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