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### ACCEPTED MANUSCRIPT

## SYSTEMATIC FRAMEWORK FOR SUSTAINABILITY ASSESSMENT ON CHEMICAL PRODUCTION PATHWAY: BASIC ENGINEERING STAGE

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#### ABSTRACT

Assessment on sustainability of production pathway is an important step to promote the sustainability features during early process design stage. The early process design stages can be divided into research and development (R&D), preliminary engineering and basic engineering. Note that, the assessment frameworks for the R&D and preliminary engineering stages have been presented in our previous works. As continuation, a systematic framework for the assessment of chemical production pathway in basic engineering design stage is presented in this work. This framework emphasises on the inherent safety, health and environment (SHE) and economic performance (EP) assessment of chemical production

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