An Ideal Toolkit Framework

A high-level STYLE view

Environmental Impact Module

Social Impact Module

Economic Impact Module

| Materiality Setup | → | Integrated Qualitative Screening Tool | → | Semi-Quantitative Assessment Toolset | → | Quantitative Comprehensive Sustainability Assessment |

Technology Readiness Level 4-5 → Technology Readiness Level 7-8
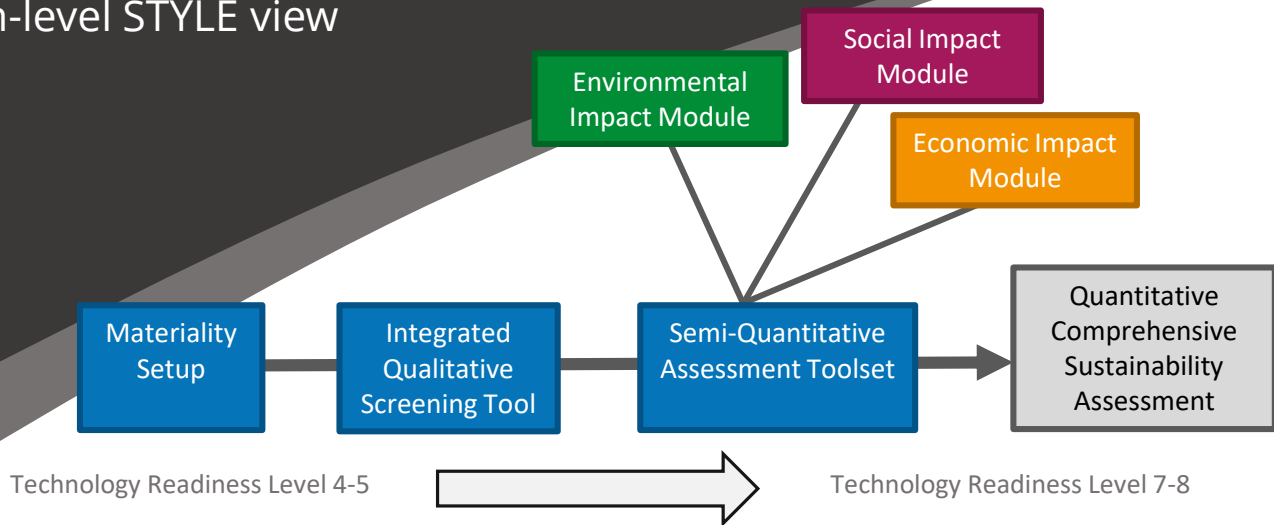
Context
Project STYLE set out with a remit to look for an ideal collection of tools to meet the needs of the *STYLE scenario**. Although promising *features* were found in existing open access tools, the most suitable tools found were developed in-house by industry and lacked availability and transferability to be used across the SPIRE process industries. Consequently, STYLE has worked with project partners and stakeholders to develop a high-level structure for an 'Ideal Toolkit', taking useful features from existing tools and feedback from tool users.

Materiality Setup
This upfront stage allows an in-house or sector level *sustainability expert* to set-up the toolkit, customising the next stages to make the evaluation more relevant and efficient. Preliminary modules and questionnaires can be selected and options filtered based on sector, geography, product vs process change, study boundary and corporate priorities.

Integrated Qualitative Screening Tool
This stage takes a project team through a series of qualitative questions, getting them to score the technological solution relative to a defined benchmark (e.g. -2 to +2). The questions cover a range of issues and opportunities across environmental, economic and social pillars. Given that questions are subjective, it is important that they are individually specific to the sector, as comprehensive as possible, and with space to allow justification and comments to be captured alongside the

answers. Grouped and/or proxy indicators are necessary to keep the amount of questions at a relevant and manageable level, although transparency on this aggregation and weightings should be provided to aid acceptance of the tool and to enable potential process improvements to be identified. The output of the screening tool should be of a simple visual format to summarise whether technological options are likely to be better or worse in different sustainability areas.

Semi-Quantitative Assessment Toolset
Once the project reaches pilot scale, more data allows semi-quantitative assessments to be carried out, with modules selected based on screening tool areas of interest or concern. Some of the data input will be mass balance style formats, which then requires links to generic and in-house databases. Given that data uncertainty may still be high, an ideal tool would allow users to include absolute values, order-of-magnitude comparisons, or data ranges. Outputs from such tools should clearly show where likely hotspots are in the process and allow easy export of data. If the project warrants progression to a fully quantitative comprehensive assessment, data input would then not have to start from scratch again.

Through all stages and sustainability pillars, a Life Cycle Thinking approach should be taken and the toolkit should be able to highlight sustainability beneficial aspects, not just negative impacts.

For more information see www.spire2030.eu/style

***STYLE Scenario**: A project team is evaluating options for a resource or energy improvement for their process or product and they need a pragmatic tool to check the broader sustainability implications of each technological solution*

STYLE

SUSTAINABILITY TOOLKIT FOR EASY LIFE-CYCLE EVALUATION

SPIRE PROJECT