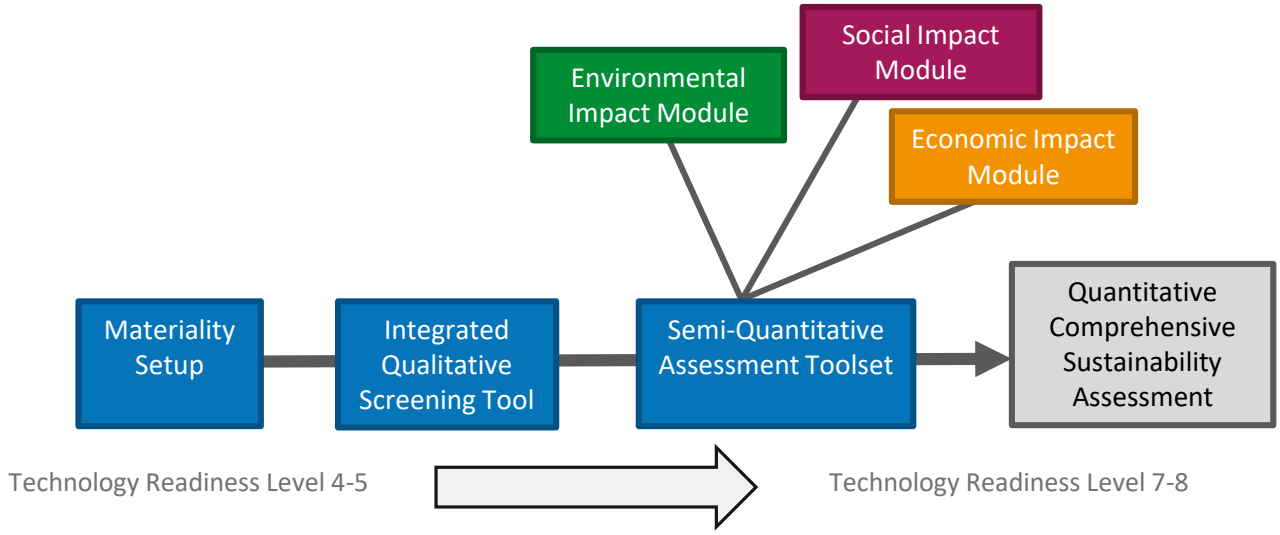
Click on toolkit modules for further information

STYLE Ideal Toolkit Framework

A high-level view of features and functions



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.

The Ideal Toolkit should be able to perform assessments in, and across, any of the SPIRE process industry sectors, for projects between Technology Readiness Level 4-7. In order to meet the needs of the different sectors and scenarios, the Toolkit is structured as a series of modules:

- An upfront Materiality setup to define the goal and scope of the assessment
- An Integrated Qualitative Screening Tool to facilitate a initial comparison between the technological solution and a baseline
- A Semi-Quantitative Toolset to investigate areas of interest or concern from the screening assessment

Although the toolkit is targeted at those who are not sustainability specialists, it is recommended that expert and non-expert modes are provided to allow different levels of access to data, background methodologies and more complex calculation options. The toolkit should be trainable to non-specialists in no more than half a day; additional help and user forums should be web-based.

Through all stages and sustainability pillars, a Life Cycle Thinking approach should be taken and the toolkit should be able to highlight sustainability benefits as well as impacts (e.g. use value or job creation).

***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*

For more information see: www.spire2030.eu/style

European Commission

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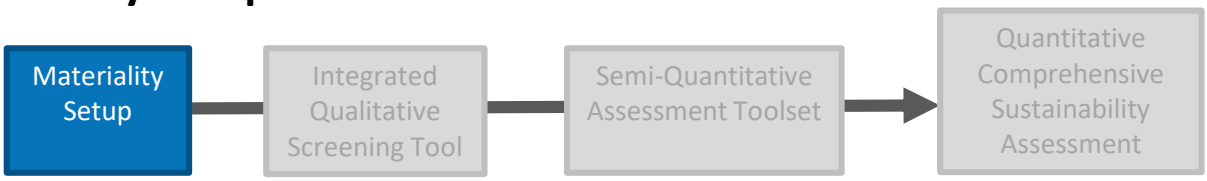
Materiality Setup



This first 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
- Geographic position of the activity
- Product or process improvement
- Study boundary
- Corporate priorities

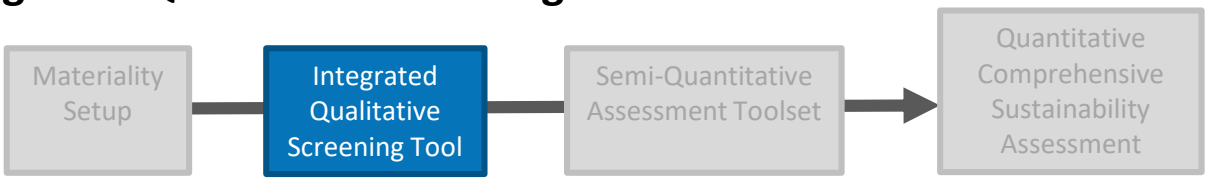
The setup is defined either by the expert user, selecting options considered to be the most relevant, or the user could select one of a series of default setups. These default setups could be developed by:

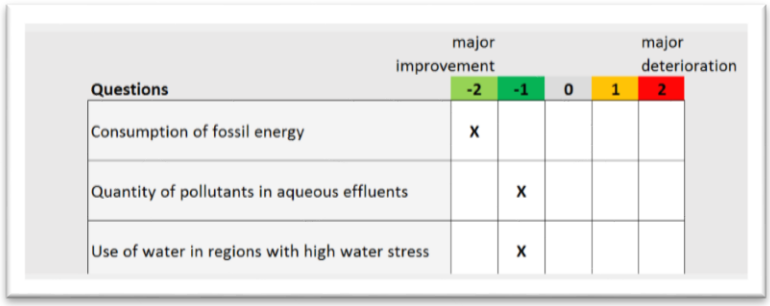
a) Expert groups using their experience and views
b) Methods such as meta-analysis – taking a large amount of detailed sustainability assessments to define sets of indicators that are typically most influential for a sub-sector or type of technological solution.

Objectives and expectations could also be defined for the assessment, to ensure that all members of the project team are clear on the purpose of the assessment.

Return to Ideal Toolkit Summary

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.

Input Form:

- An easy to use graphical user interface, e.g. with drop-down options and optional Wizard mode, would help guide the user through the input stages.
- Answers can be provided qualitatively, e.g. on a scale from -2 to +2, indicating whether the technological solution is likely to represent a deterioration or improvement on a particular sustainability aspect.
- Comment boxes can be used to allow project teams to justify their answers and/or flag uncertainties.
- The set of questions should be specific and use clearly-defined concepts, focusing on technological aspects rather than sustainability terminology, e.g. “Will this reduce emissions of organic material to water?” rather than asking about “impact on freshwater eutrophication potential”.

Method:

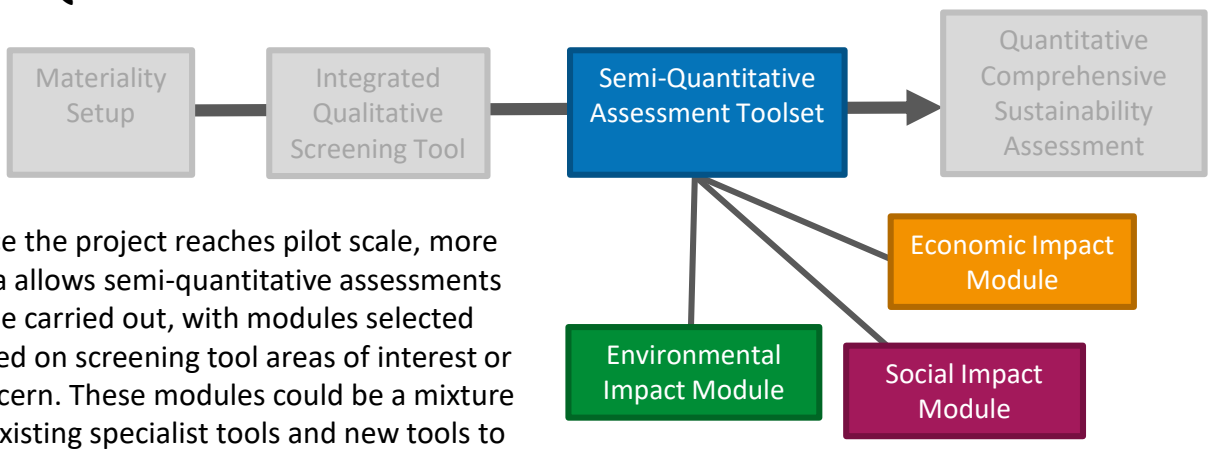
- Questions, where possible, should cover the whole life cycle and all sustainability pillars, including use phase and use value.
- Scores from questions will typically need to be aggregated to keep the amount of outputs at a manageable level. Transparency on this aggregation and weightings should be provided to aid acceptance of the tool and to enable potential process improvements to be identified.
- Included documentation should explain the sustainability issues to non-specialists, which can also help normalise some of the subjectivity involved in answering the questions.

Output:

- A simple visual presentation of the results should be used to summarise whether technological options are likely to be better or worse in different sustainability areas (e.g. using a star diagram or matrix).
- The output should summarise ‘red flags’ and warnings, helping to visualise the limitations of the assessment.

Return to Ideal Toolkit Summary

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. These modules could be a mixture of existing specialist tools and new tools to address gaps.

Input Form:

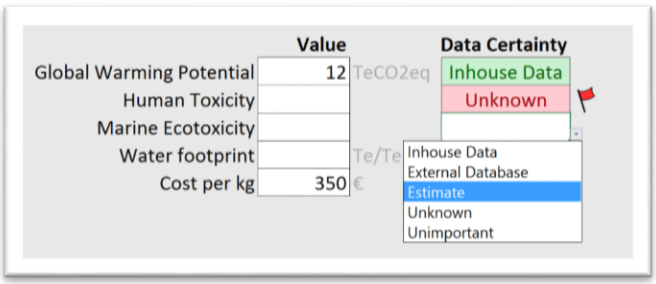
- Some of the data input will be mass balance style formats, which then requires links to generic and in-house databases. Some factors will still have to be dealt with qualitatively, where data is lacking or concepts are difficult to quantify (e.g. social factors).
- An easy to use graphical user interface, e.g. with drop-down options and optional Wizard mode, would help guide the user through the input stages.
- Features are required to address data uncertainty in *input* data (e.g. comment boxes to capture data quality rating, or enhanced methods to score and calculate confidence ratings for data).
- An option could be included to allow range data input, whereby the user may have higher confidence in specifying a minimum and maximum, rather than an absolute value.
- The inclusion of integrated unit conversion would make it easier to input data, plus it aids data traceability and minimises opportunities for error done in ad-hoc conversions external to the tools.

Method:

- Questions, where possible, should cover the whole life cycle and all sustainability pillars, including use phase and use value.
- Grouped and/or proxy indicators are necessary to keep the amount of data inputs and outputs at a 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.
- Methods are required to address data uncertainty in the tool calculations and output, e.g. sensitivity analysis.
- Full transparency of methodologies used is encouraged; if an ideal methodology is not available, tools should use best currently available or 'least worst' methodology.

Output:

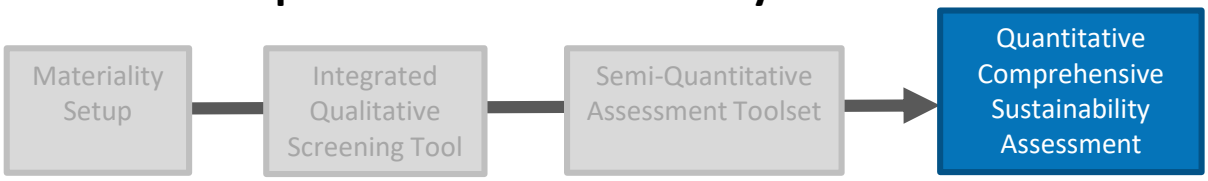
- The output of the screening tool should in a simple visual format to summarise whether technological options are likely to be better or worse in different sustainability areas (e.g. using a star diagram); a common unit can also be used for some impacts, to help comparisons.



- The output could be exportable in a black-box format, to allow internal or trusted business-to-business discussions regarding potential improvements, without disclosing the input data.
- The output should summarise 'red flags' and warnings, helping to visualise the limitations of the assessment.

Return to Ideal Toolkit Summary

Quantitative Comprehensive Sustainability Assessment



Quantitative comprehensive sustainability assessment tools (i.e. meeting the requirements of ISO standards 14040-44) were outside the scope of the STYLE project.

The STYLE project recommends, however, that the data from the Semi-Quantitative Assessment Toolset are in a format suitable for easy import into fully comprehensive tools. This ensures that if an organisation chooses to move to this stage, they are not having to start from scratch with data input.

Comprehensive tools have been addressed in more detail in the MEASURE and SAMT projects:

- www.spire2030.eu/measure
- www.spire2030.eu/samt

Return to Ideal Toolkit Summary