



MEASURE



SPIRE
PROJECT



STYLE

SUSTAINABILITY TOOLKIT FOR EASY LIFE-CYCLE EVALUATION

SPIRE-04-2014 Projects

Harmonised Recommendations

SAMT-STYLE-MEASURE Harmonised Recommendations

The Sustainable Process Industry through Resource and Energy Efficiency (SPIRE) Public–Private Partnership brings together several sectors of process industry: cement, ceramics, chemicals, engineering, minerals and ores, non-ferrous metals, steel and water. All SPIRE sectors can be considered as resource and energy intensive and thus improving resource and energy efficiency are urgent issues for improving the sustainability and competitiveness of the sectors.

For the SPIRE sectors, sustainability assessment methods are crucial for evaluating the current state and the achievement of the goals related to resource and energy efficiency. For evaluating the overall resource and energy efficiency of the SPIRE sectors as a whole, tools and indicators that are applicable for cross-sectorial assessment are required. Three parallel SPIRE-04-2014¹ projects (SAMT, STYLE and MEASURE) with a specific objective to increase the European knowledge base related to applied sustainability assessment tools, methodologies, indicators and to overcome the bottlenecks for cross-sectorial take-up and further development in the process industry have now reached completion.




The aim of the SAMT project was to review and make recommendations about the most potential methods for evaluating sustainability in the process industry to improve the integration of sustainability assessment methods in decision making. It was discovered, for example, that there is a demand for both developing existing methods to cover and integrate different aspects of sustainability (environmental, economic and social), and to develop simplified assessments with harmonised guidelines, in which the assessment process could be integrated to the daily decision-making by automating part of the work flow. Additionally, based on the analysis of existing standards (including ISO 14000 family and PEF) future standardisation activities related to sustainability assessment methods were proposed.

Project STYLE set out with a remit to look for an ideal collection of tools to meet the needs of a specific 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’*. 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. STYLE has made recommendations for the further development of this Toolkit.

The MEASURE team focussed on concepts to guide innovation processes within SPIRE collaborations towards more sustainable technologies and to facilitate industrial cooperation in sustainability assessment cross-sectorial as well as along value chains. MEASURE advocates an innovation management approach, which promotes holistic understanding of economic, environmental and societal challenges that a new technology must respond to. The approach provides an ability to compare alternative solutions, understanding of their benefits and drawbacks as well as of the (remaining) distance to a defined target for robust decision-making. Cooperation between industries aiming for a holistic understanding of the chances of industrial symbioses and product value chain management are supported, e.g., by recommendations for a harmonised data exchange.

This document summarises the harmonised SAMT, STYLE and MEASURE overall recommendations.

Detailed recommendations, background and roadmaps for each of these projects can be found through the following links:

	<p>Website: www.spire2030.eu/samt Final Recommendations: www.spire2030.eu/samt</p>
	<p>Website: www.spire2030.eu/style Recommendations Roadmap: https://goo.gl/5uYHWY Ideal Toolkit Framework: https://goo.gl/2zMHHY</p>
	<p>Website: www.spire2030.eu/measure Recommendations Roadmap: https://goo.gl/wWdOaE</p>

¹ http://cordis.europa.eu/programme/rcn/665065_en.html

UPTAKE ACTIONS

Action	Description	Actors	Timing ²
Promote a wider use of life-cycle-thinking (LCT)-based tools among process industry for regular decision-making	In order to reach the European sustainability targets, a wider use of LCT-based tools among the different sectors of the European process industry is needed for regular decision-making, as well as for innovation management.	Industry and industrial associations	Short term
Support data exchange and cross-sectorial collaboration between industries	More (standardised) data exchange between industries of different sectors in LC(S)A studies is required in order to identify synergies and potentials for efficiency increase along value chains and in cross-sectorial collaborations.	Industry and industrial associations	Short / Medium term
Enable the use of LCT-based tools in the SPIRE context for guidance and assessment of innovation projects	The use of LCT-based tools for the assessment of innovation in the context of European collaborative projects can gain significant benefits in terms of more sustainable process design and should be intensified in the SPIRE PPP. Those industry-oriented projects have to focus strongly on the future impact potentials of new technologies and should be more intensely used to demonstrate the chances of coupling engineering, design, decision-making and LCT.	SPIRE PPP teams	Short term
Install a cross-sectorial forum for promoting SPIRE-4 recommendations & 'insights' and exchanging knowledge & good practices	EC supported by A.SPIRE should continue to promote the findings from STYLE, SAMT and MEASURE to current and future SPIRE projects. Joint sustainability working group or forum across different process industry sectors and LCA or sustainability experts to share experiences and good practices	Active dissemination of the results from all the SPIRE4-projects towards other SPIRE PPP teams, LCA practitioners in industry and academia, software developers, and other stakeholders by the EC supported by A.SPIRE	Short/Medium term

² Short term: up to 2020; Medium term: up to 2025; Long term: 2025-2030+

Guidance for use of sustainability evaluations in SPIRE projects	Providing guidance for use of early-stage and stage-gate approaches to evaluations in SPIRE projects –based on STYLE, SAMT, MEASURE	SPIRE PPP and partner organisations	Short term
Drive more harmonisation	<p>There is a distinct need for more harmonisation of LC(S)A databases, methodological choices and communication approaches in the industrial as well as in the research funding environment.</p> <p>Agreements and harmonisation activities within industry sectors and along industrial supply chains (e.g. Product Category Rules (PCR)) should be supported, and periodically re-assessed and updated. ISO 14040/44 has to be the basis.</p>	Industry, authorities, academia	Short/Medium term
Increasing market uptake, customer and consumer knowledge	Increasing interest and awareness for making sustainable choices through active communication and education activities, and increasing availability of easy access sustainability information in products	Industry, authorities, academia	Long term
Support development and usage of Open Access tools (cross-sector SME target)	Funding support for the development and maintenance of Open Access Qualitative Screening Tools	Policy (funding bodies)	Short/Medium term
	Coaching of organisations new to sustainability evaluations in the usage of Open Access tools	Funding bodies, industry, LCM community	Medium/Long term

METHODOLOGY ACTIONS

Action	Description	Actors	Timing
Improvement of existing environmental assessment methods	All methodologies applied should be based on standards. ISO 14040/44 present the widely accepted framework for LCA; all environmental life cycle-based methods should be based on it.	LCM Community, Industry, standardisation body	Short / Long term
	Standardise vocabulary and semantics across the three sustainability pillars: In order to promote compatibility between tools and to increase common understanding of terms, the Life Cycle Management community should work to provide more standard definitions of terms.	LCM Community, Industry, standardisation body	Short term
	Improvement of current standards in a way that they provide a clear methodological approach to handle "closing the loop" models and end-of-life modelling i.e. aspects related to circular economy.	Standardisation body + dedicated stakeholder, academia, industry	Short term
	Broader development of various PEFCRs and testing the newly developed biodiversity indicators proposed by PEF and UNEP (See SAMT D3.2) to gain experience and further develop the approach	Academia, JRC, Industry	Short/Medium term
	Further development and implementation of impact assessment methods related to toxicity (such as ProScale and USEtox), Abiotic depletion potential, Ionization potentials, micropollutants, land use changes and others	Academia, JRC, Standardisation body	Medium term
	Develop approaches to uncertainty and sensitivity analysis for data-lean evaluations including LCA software tools to enable the use of a wider range of methods for uncertainty propagation. Prepare a new initiative "Guidelines for simplified LCA" under ISO TC 207	Standardisation body + dedicated stakeholder, involvement from industry & RTOs, ISO SC5	Medium term
Further development of social assessment methods	Enhance/increase use & knowledge of social assessment methods, e.g. by testing the newly developed S-LCA guidelines (See SAMT D2.2) and develop approaches to incorporate social factors in sustainability assessments and agreements of the community on the linkage of social indicators and impacts to a product or organization	Industry (involving stakeholders, community & market demands), WBCSD, RTOs	Short term
	Standardization of social impact assessments, in particular Social-LCA, development of databases on social impacts	Standardization body + dedicated stakeholder, involvement from industry & research	Medium term

Standardization of monetization aspects	Find consensus on quantitative economic approaches considering usefulness of input/output systems and monetization aspects via active involvement in new standardisation initiatives (ISO 14008 & 14007)	Standardisation body + dedicated stakeholder, involvement from industry & RTOs, ISO SC5 & SC1	Short term
Further development of integrated assessment approaches	Develop approaches to incorporate social factors in sustainability assessments. Harmonisation of integrated assessment methods working in particular on the critical issues of 1) normalisation and weighting 2) possible generation of synthetic scores 3) communication and visualisation, trade-off identification and assessment	RTO's, Industry, Commission (H2020 funding), LCM community	Short/Medium term
	A consensus has to be found on how to determine resource efficiency and on the definitions of resources themselves	LCM Community, Commission (H2020)	Short term
	The use of multi-criteria decision methods (MCDM) should be more integrated into the decision processes in innovation and development processes to provide consistent and transparent decision guidance	LCM Community, SPIRE PPP, Industry	Short/Medium term
	Improve robustness of qualitative screening approach, based on consensus and collaboration with 'softer sciences', ie. Human factors	LCM Community, Industry	Short/ Medium term
Guidance for method and tool selection	Specify the methodology for calculating expected impacts of SPIRE projects (See recommendations in the MEASURE roadmap, section 4)	LCM Community, Commission (within SPIRE PPP)	Short term
	Implementation of a target-oriented stage and gate process within publicly funded projects is strongly recommended in order to funnel R&D results into innovation. (See MEASURE roadmap, section 4)	SPIRE PPP, Commission (H2020)	
	Extension and continuous development of the ELCD platform	Commission, JRC, stakeholders	Short/Medium term
	Development of a web-based system to support method and tool selection (ToolKit), offering comprehensive and up-to-date information of available methods and tools, with possibility to search for suitable methods for different decision-making contexts and sustainability challenges according to selected criteria.	Commission (H2020), with contributions from industry, academia and stakeholders	Medium term
	Guidance Framework for an <i>Ideal Toolkit</i> specification (to support industry decision making in projects from Technology Readiness Level 4-7).	Commission (H2020), with contributions from industry, academia and stakeholders	Short/Medium term




TOOLS ACTIONS

Action	Description	Actors	Timing
Development of tools to simplify data handling & management	Development of automated steps to simplify data collection, handling and uncertainty management. Examples of successful developments from industry include for example PreSelect and Ecovadis	LCA software developers, ICT experts, with contributions from LCA practitioners from industry & academia	Short term
Development of simple tools adaptable to different contexts	Provide access to site specific or primary data and the possibility to modify pre-defined assumptions in simplified tools	LCA software developers, ICT experts, LCA practitioners (industry & academia)	Short term
	Adaptable tools allowing a shift between different levels of assessments: from simplified to comprehensive and vice versa	LCA software developers, ICT experts, LCA practitioners (industry & academia)	Medium term
	Integration of tools for improved visualisation of results, & handling and visualisation of uncertainty	LCA software developers, ICT experts, LCA practitioners (industry & academia)	Medium term
	Development of Open Access Qualitative Screening Tool for high-level monitoring of sustainability in industry and collaborative projects	LCM community, industry, policy (SPIRE)	Short/Medium term
Tools for high throughput calculations of scenarios	LCA Internet Managers/calculation tools for scenario calculations	LCA software developers, ICT experts, LCA practitioners (industry & academia)	Medium term

DATA ACTIONS

Action	Description	Actors	Timing
Improving interoperability between different datasets and LCA software	Improving the interoperability among ELCD/ILCD DN and existing LCA software packages, taking into account related global developments under the UNEP/SETAC Life Cycle Initiative	LCA software developers and data providers, JRC	Short
	A review of the ISO/TS 14048:2002 'LCA data documentation format', considering the possibility to improve interoperability of different datasets and software packages, creating updated and extensive principles for data documentation, and taking into account the developments related to ILCD DN and UNEP/SETAC LCI	Standardisation body, ISO TC207, LCA software developers and data providers, JRC	Short
Improving availability of data	Increase availability of generalised LCI data from different sectors via cooperation through the industry associations, using agreed principles for transparent data documentation	Industry, Industry associations, database providers	Short/Medium
	Better access of ERP to the plant floor data, agreement on data exchange standards, and an integration of process models and LCA models into plant management	Industry, software developers	Short/Medium
	Agreed principles for confidential data sharing (e.g. using a black box model proposed by the MEASURE project or similar approach)	Industry associations	Medium
	Integrate social and economic data into public databases	LCM community, Industry associations	Medium/Long term
	Streamline databases with more efficient data input for industry and better meta data for capturing data quality and providence	LCM community, policy	Short/ Medium term
	Data-mining methods for generic LC inventories	Software developers	Short/ Medium term
	Consider and develop new approaches to increase availability of generalised data for social assessments	All actors	Medium/long



 The SAMT logo consists of four green hexagons arranged in a row, containing the letters S, A, M, and T. A stylized city skyline is visible behind the letters.	<p>This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No 636727.</p>
 The STYLE logo features a colorful circular icon with segments in pink, blue, green, and orange. To its right, the word "STYLE" is written in large, bold, black capital letters. Below "STYLE", the text "SUSTAINABILITY TOOLKIT FOR EASY LIFE-CYCLE EVALUATION" is written in smaller, black capital letters.	<p>This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No 636771.</p>
 The MEASURE logo is a stylized triangle with a gradient from green at the top to orange at the bottom. The word "MEASURE" is written in bold, black capital letters across the middle of the triangle.	<p>This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No 637016.</p>