

**Program Priority: SO1.1 - Improve the framework conditions for innovation in the Alpine Space**

**Work Package: WPT3 Fostering CE processes in Alpine Space with digitalisation processes**

**Output: O.T3.2 Enterprise cooperating with research institution to foster CE with digitalisation**

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**Version:** Final

**Month, YEAR:** June, 2022

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## Purpose of the document

The purpose of this document is to describe the achievement of the output O.T3.2, described as follows in the AF: *“PP3 bwcon and PP10 Jožef Stefan Institute will cooperate to foster CE among SMEs with digitalisation.”*

The output relates more specifically to the approach put in place in *WPT3 Fostering CE processes in Alpine Space with digitalisation processes* – under the coordination and leadership of PP3 bwcon – making use of the CIRCULAR4.0 toolkit developed in *WPT2 Benchlearning and knowledge exchange actions to strengthen CE processes in AS through digitalisation* – under the coordination and leadership of PP10 Jožef Stefan Institute.

The present document encompasses the following elements:

- Methodology followed to assist SMEs for technology innovation
- Overview of the assistance provided to SMEs

## Methodology followed to assist SMEs for technology innovation

The methodology followed in Circular4.0 to foster CE among SMEs with digitalisation builds on the following pillars:

- Circular4.0 toolkit,
- Local pilot actions implemented by each project partner to test the toolkit.

### CIRCULAR4.0 TOOLKIT

The Circular4.0 toolkit encompasses three sets of tools that were developed/identified/proposed for use in the scope of the Circular 4.0 project and/or adopted from existing tools:

- Circularity assessment score (CAS2.0) and other circularity assessment tools
- Digital Maturity Assessment (DMA) and other digital maturity assessment tools
- Circularity Acceleration training course 4.0 (CAT4.0)

Those toolsets are described in detail in the output O.T2.1 Circular4.0 toolkit (see annexes). They were meant as the basis to be deployed in the scope of WPT3, as the fundamental tools to accelerate SME's transition to circular economy by project partners, in the framework of local pilot actions.

### LOCAL PILOT ACTIONS

The main objective of WP T3 was to develop transnational and local actions to monitor the effectiveness of SMEs digitalisation to push them toward CE processes. The role of digitalisation as an 'enabler' for the CE was tested with the support of the CIRCULAR4.0 toolkit. 15 local pilot actions were implemented by the project partners, according to a shared methodology. The following picture summarises the main steps of this methodology which relate to the Circular 4.0 toolkit:

Common parts of all local actions	Relation to the Circular4.0 toolkit
Circularity assessment	Use of the <b>Circularity assessment score (CAS2.0)</b> and/or other circularity assessment tools from the toolkit to measure evaluate the maturity of the companies with respect to different aspects of circular economy.

<b>Digital maturity assessment</b>	Use of the <b>Digital Maturity Assessment (DMA)</b> and/or other digital maturity assessment tools from the toolkit to measure evaluate the maturity of the companies with respect to different aspects of digitalisation.
<b>Access to self-learning materials</b>	Access to the Circularity Acceleration training course 4.0 (CAT4.0) as a self-learning resource and/pr delivery of related workshops.
<b>Identification of innovation needs</b> <b>1:1 assistance</b> <b>Development of recommendations</b>	<p>Assistance provided either directly by the partners or in combination with external experts (most common case) in order to identify, on the basis of the circularity and digital maturity assessments, opportunities for the improvement of the companies' circularity with the support of digitalisation.</p> <p>The aim was to define specific recommendations such as:</p> <ul style="list-style-type: none"> <li>▪ Technology adoption</li> <li>▪ New or improved process</li> <li>▪ New or improved or transformed business model</li> <li>▪ New or improved products</li> <li>▪ New or improved services</li> </ul> <p>The set of tools in the Circular4.0 toolkit also includes financial/investment schemes and business plan to address circularity transformation (business canvas) and other supporting tools, assisting SMEs to embark on a circularity business transformation journey.</p>

While the selection of specific tools used in the local pilot action was left up to the partners, e.g. in order to take into account local specificities, the overall methodology and steps listed here above were common to all local pilot actions.

## COOPERATION BETWEEN PP3 BWCON AND PP10 JOŽEF STEFAN INSTITUTE

The collaboration between PP3 bwcon and PP10 Jožef Stefan Institute did materialise in their respective roles as WPT3 and WPT2 leaders. Whereas PP10 Jožef Stefan Institute had the overall responsibility for the development of the toolkit and the evaluation methodology to assess its performance (in collaboration with further partners), PP3 BWCON had the responsibility to ensure the coherent use of the toolkit in the framework of the 15 local pilot actions implemented in WPT3, as well as the assessment of the performance of the toolkit as part of the overall assessment of the local pilot actions. This was mirrored in the respective templates (see annexes) developed in WPT3:

- Template for the description of the local action plans, used for compiling the feasibility plans D.T3.1.1, D.T3.1.2 and D.T3.1.3.
- Templates for reporting on the implementation of the local action plans, used for compiling the deliverables D.T3.2.1, D.T3.2.2 and D.T3.2.3.
- Dedicated part of the evaluation questionnaire to assess the performance of the tools used in the local pilot actions. The results were used for compiling the deliverable D.T3.3.2.

The coordination activities between PP3 bwcon and PP10 Jožef Stefan Institute did mainly take place in the context of the following Technical Committee (TC) meetings:

- TC meeting, Lyon, 13.10.2021 (see Agenda in the annexes)
- TC meeting, online, 18.01.2022
- TC meeting, online, 12.04.2022
- TC meeting, online, 08.06.2022

As well as the following meetings of the Evaluation Committee:

- 1<sup>st</sup> meeting of the Evaluation Committee, online, 19.01.2022
- 2<sup>nd</sup> meeting of the Evaluation Committee, online, 08.06.2022

## Overview of the assistance provided to SMEs as a result of the collaboration between PP3 BWCON and PP10 JOŽEF STEFAN INSTITUTE in WPT2 and WPT3

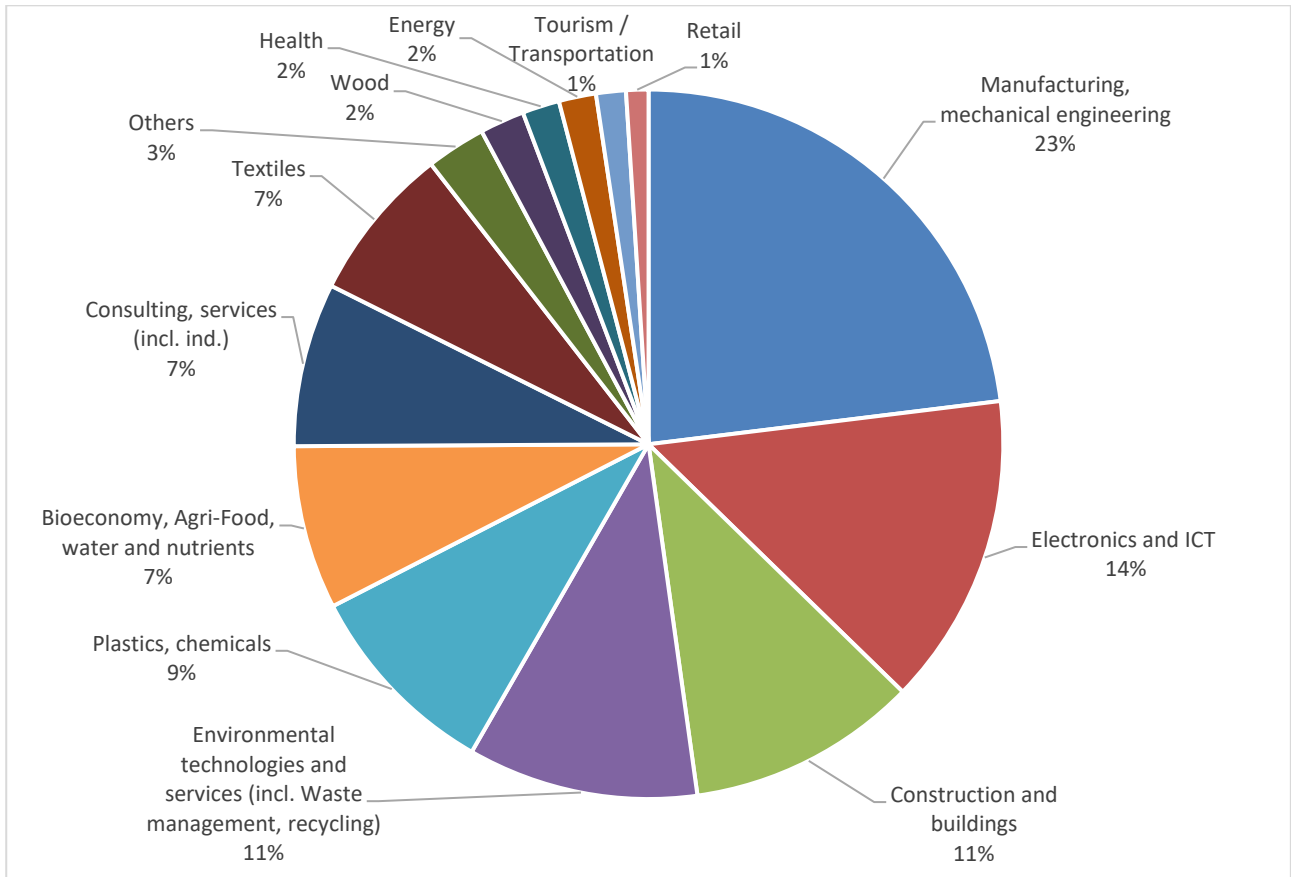
In total, 15 local actions (WPT3) did provide support to 295 businesses, out of which 267 SMEs, 25 large enterprises and 3 startups. They were split as shown in the following table across the 3 overarching models: CE design, CE optimal use and CE value recovery:

CE model	Business type	Number of businesses
<b>Design</b>	Large company	8
	SME	94
	Start-Up	3
<b>Total</b>		<b>105</b>
<b>Optimal use</b>	Large company	4
	SME	117
<b>Total</b>		<b>121</b>
<b>Value recovery</b>	Large company	13
	SME	56
<b>Total</b>		<b>69</b>

The overall split of the businesses supported across industrial sectors was as follows:

Industrial sectors	Number of businesses
Manufacturing, mechanical engineering	68
Electronics and ICT	42
Construction and buildings	31
Environmental technologies and services (incl. waste management, recycling)	31
Plastics, chemicals	27
Bioeconomy, Agri-Food, water and nutrients	22
Consulting, services (including industrial services)	22
Textiles	21
Others	8

Wood	6
Health	5
Energy	5
Tourism / Transportation	4
Retail	3
<b>Total</b>	<b>295</b>



As the figures show, each of the following sectors represents at least 5% of the overall sample of businesses:

1. Manufacturing, mechanical engineering
2. Electronics and ICT
3. Construction and buildings
4. Environmental technologies and services (incl. waste management, recycling)
5. Plastics, chemicals
6. Bioeconomy, Agri-Food, water and nutrients
7. Consulting, services (including industrial services)
8. Textiles

Altogether, those 8 sectors represent 264 businesses, i.e. 89% of the sample and they are mostly well distributed across all five countries – Austria, France, Germany, Italy and Slovenia:

Industrial sectors	Total	Austria	France	Germany	Italy	Slovenia
Manufacturing, mechanical engineering	68	4	21	19	20	4
Electronics and ICT	42	5	5	18	9	5
Construction and buildings	31	4	4	8	15	
Environmental technologies and services (incl. waste management, recycling)	31	3	5	7	13	3
Plastics, chemicals	27	3	6	7	8	3
Bioeconomy, Agri-Food, water and nutrients	22	1	7	5	5	4
Consulting, services (including industrial services)	22	3	2	5	9	3
Textiles	21	2	12	1	5	1
<b>Total</b>	<b>264</b>	<b>25</b>	<b>62</b>	<b>70</b>	<b>84</b>	<b>23</b>

### Overview of the support provided

The following table provides a quantitative overview of the support provided to the 295 companies considered:

Company type	CE maturity assessment	Digital maturity assessment	1:1Assistance	Action Plan
Large company	23	22	25	15
SME	251	264	266	223
Start-Up	3	3	3	
<b>Total</b>	<b>277</b>	<b>289</b>	<b>292</b>	<b>238</b>

The split across the 3 CE models implemented in the project is as follows:

CE model	Company type	CE maturity assessment	Digital maturity assessment	1:1Assistance	Action Plan
<b>Optimal use</b>	Large company	4	4	4	4
	SME	115	115	117	95
<b>Total</b>		<b>119</b>	<b>119</b>	<b>121</b>	<b>99</b>

CE model	Company type	CE maturity assessment	Digital maturity assessment	1:1Assistance	Action Plan
<b>Desgin</b>	Large company	6	5	8	8
	SME	80	93	93	86
	Start-Up	3	3	3	
<b>Total</b>		<b>89</b>	<b>101</b>	<b>104</b>	<b>94</b>

CE model	Company type	CE maturity assessment	Digital maturity assessment	1:1Assistance	Action Plan
Desgin	Large company	13	13	13	7
	SME	56	56	56	42
<b>Total</b>		<b>69</b>	<b>69</b>	<b>69</b>	<b>49</b>

### Overview of the tools implemented

The core of the support provided to SMEs as a result of the collaboration between PP3 BWCON and PP10 Josef Stefan Institute lies in the use of tools from the Circular 4.0 toolkit for CE and digital maturity assessments in the context of the local pilot actions.

The following table lists the tools used in the project regions for circular and digital maturity assessment:

Tools	Business type	Number of businesses
<b>CE maturity</b>	Industrie circulaire	38
	Check for linear risks and circular opportunities (based on the example of the CAS) + digi check (evaluation of contexts)	58
	CAS 2.0/CAS 4.0 (and local adaptations)	181
<b>Total</b>		<b>277</b>
<b>Digital maturity</b>	Industrie circulaire	64
	Check for linear risks and circular opportunities (based on the example of the CAS) + digi check (evaluation of contexts)	58
	i4Ready	15
	Test Industria 4.0 - Assessment of maturity	28
	SELF4.0	66
	Innocape	10
	UP tool	40
	Digital transformation tool quick check	8
<b>Total</b>		<b>289</b>

When considering the tools used by the fifteen partners for the circular and digital maturity assessment of the businesses, the following observations can be made:

- **Digital maturity assessment:** The French and the Austrian partners used mostly tools which were designed to combine the digital and circular maturity assessment in one. The digital maturity part incorporated elements of the CAS tool and was adapted to the local context by the partners. The German, Italian and Slovenian partners used mostly tools already available on the local level.
- **Circular economy assessment:** as described above, the French and the Austrian partners used tools which were designed to combine the digital and circular maturity assessment in one. The circular economy part incorporated elements of the CAS tool and was adapted to the local context by the partners. The Italian and Slovenian partners used the CAS 2.0 tools. A very large majority of the circular maturity assessments was made on the basis of the CAS tool developed by JSI, although with some local adaptations.



## Conclusions

The evaluation of the local pilot actions, including the tools used by the partners showed a high relevance of the pilots for improving the awareness and maturity levels, as well as generating innovative activities, of SMEs, especially those with an initial low or medium maturity level. It also showed that the tools used were all relevant to increase the awareness and maturity of the SMEs in general.

## Annexes

1. Template for the description of the local action plans, used for compiling the feasibility plans D.T3.1.1, D.T3.1.2 and D.T3.1.3.
2. Templates for reporting on the implementation of the local action plans, used for compiling the deliverables D.T3.2.1, D.T3.2.2 and D.T3.2.3.
3. Evaluation questionnaire to assess the performance of the tools used in the local pilot actions. The results were used for compiling the deliverable D.T3.3.2.